
SCIENCE SUBJECT DESCRIPTIONS

BIOL970 Advances in Conservation Biology 12cp

Autumn Wollongong On Campus

Contact Hours: 6 hr per week

Restrictions: Students must qualify for entry into the MSc (Biological Sciences) and have an undergraduate background, at senior undergraduate level, in ecology.

Assessment: Critical review paper & seminar; Seminar, Land & Environment Court assignment; Practical reports; Field camp & report; Final examination

Subject Description: This subject examines the science behind modern conservation biology, integrating ecology, ecological genetics & legislation. Emphasis is placed on understanding ecological & genetic principles, mastering lab. & field skills & elementary mathematical modelling, & then placing these in the context of current legislation & other conservation instruments. Students use these skills & knowledge to assess a recent issue in conservation biology, as a critical review of methodology & conclusions.

BIOL971 Advanced Topics in Marine and Terrestrial Ecology 12cp

Spring Wollongong On Campus

Contact Hours: 2 hr Lecture, 4 hr Tutorial/Practical per week

Assessment: Research project or Literature review; Seminar presentation

Subject Description: Introduction to ecology - levels of organisation (individual, population, community and ecosystem) and the importance of spatial and temporal variation. Experiments in ecology - field and laboratory, their design and analysis, including the detection of human impacts. Biotic interactions: the roles of competition, herbivory, predation, mutualisms and disturbance, in community structure and function. Behavioural ecology: innate vs learned behaviours and their effects on individual fitness, demography and community structure. Applied ecology: rehabilitation and ecological management. Literature review examining contemporary research in ecology (tailored to the specialisations of MSc students enrolled in the subject).

BIOL972 Ecological and Evolutionary Physiology 12cp

Autumn Wollongong On Campus

Assessment: Literature reports & project reports; Seminar presentation; Theory exam

Subject Description: Physiological and biochemical responses of animals and plants to environmental variables (light intensity, temperature, water, salt content, gas composition and pressure). Physiological and behavioural adaptations of organisms to particular aquatic and terrestrial environments. Effect of organism size and phylogeny on physiological performance. Evolution of endothermy. Using allometry to predict and evaluate physiological performance. Literature review examining contemporary research in physiology.

BIOL980 Biotechnology 12cp

Autumn Wollongong On Campus

Contact Hours: 2 hr Lecture, 4 hr Tutorial/Practical per week

Assessment: Tutorial presentation; Literature review/critique and presentation; Practical/research project reports and presentation; Theory examinations

Subject Description: Recombinant DNA technology and genetic engineering of micro-organisms, plant cells and animal cells. Expression, production and purification of recombinant proteins, cytokines and hormones. Fermentation technology and industrial scale-up. Applications of Biotechnology to the fields of human therapeutics, agriculture and diagnostics. Bioinformatics, ethical and patent issues of Biotechnology.

BIOL981 Molecular Cell Biology 12cp

Autumn Wollongong On Campus

Contact Hours: 2 hr Lecture, 4 hr Tutorial/Practical per week

Assessment: Literature review & seminar presentation on advanced topics in Molecular Cell Biology; Mid-session quiz; Practical report and student laboratory report book; Poster; Theory exam; Practical exam

Subject Description: Assumed knowledge: basic biochemistry, cell biology (cell structures of prokaryote versus eucaryotes) & molecular biology (DNA, RNA structure, basic mechanisms of DNA replication, transcription, translation & gene expression). This subject covers many specific aspects of cell biology, including cell and tissue structure, protein sorting mechanisms, secretion, membrane transport, energetics, signal transduction, apoptosis, cellular and molecular genetics of development, the cell cycle and cancer. In addition, focused lab-based practicals are offered which will provide an understanding of the techniques used for studying cell biology. These include: cell and organelle isolation and analysis, growth of various cell types in aseptic culture, observation and manipulation of cellular functions and cell surface labelling and protein blotting.

BIOL982 Cellular and Molecular Immunology 12cp

Spring Wollongong On Campus

Contact Hours: 2 hr Lecture, 4hr Tutorial/Practical per week

Assessment: Research project; Literature review; Theory examination(s); Seminar presentation

Subject Description: Cells (T cells, B cells, macrophages, dendritic cells, etc.) and organs (thymus, lymph nodes, etc.) of the immune system. Antigen presenting cells, clonal selection theory and the humoral response. Molecules of the immune system (cell surface receptors, MHC, cytokines). B and T cell activation. Antibody structure and function, generation of antibody diversity. Innate immunity, complement, phagocytosis. Tolerance and autoimmunity. ELISA techniques, monoclonal antibodies, antibody engineering, phage antibodies, flow cytometry. HIV and AIDS.

BIOL983 Research Methods in Biotechnology 12cp

Autumn Wollongong On Campus

Contact Hours: 5 hr per week**Restrictions:** Attainment of a standard equivalent to the third year of the Bachelor of Biotechnology**Assessment:** Literature research project; Presentation of one seminar; Written examination**Subject Description:** The role of proteins in biotechnology. Aspects of protein 3-dimensional structure & fold, ligand binding & catalysis important in biotechnology. Extraction & recovery of proteins in the biotechnology industry. Purification & characterisation of proteins. Animal cell & tissue culture: advanced culture techniques, flow cytometry & genetic engineering. Antibody technology: radio-immunoassay & enzyme-immunoassay techniques, signal amplification strategies. Transgenics: current status & prospects. Recent advances in gene cloning & screening. Resistance of plants to disease & abiotic stress. Genetic engineering of plants. Bioremediation using plants & microbes. Vaccines: antigen selection, presentation & delivery.**BIOL984 Applied Bioinformatics 12cp**

Autumn/Spring Wollongong On Campus

Contact Hours: 6 hr per week**Assessment:** Individual practical exercises; Written formal report; Presentation of seminar; Written examination.**Subject Description:** A revolution is underway in Biological Sciences due to the impact of Genomics, Transcriptomics and Proteomics. These new technologies have transformed Biology from a data-poor to a data-rich science. Bioinformatics is concerned with the utilisation of this new data. Bioinformatics will be explored in lectures and computer-based practicals. Databases for nucleic acid and protein sequences, structures and other parameters of biological molecules, plus linkages to the scientific literature, will be used to extract information, compare and analyse biological data. Each student will prepare a literature research paper and deliver a seminar on a relevant aspect of Bioinformatics. Students enrolled in this subject are assumed to have a knowledge of biology commensurate with that of a 3rd year life science student.**BIOL991 Major Research Project 24cp**

Autumn/Spring Wollongong On Campus

Summer 2004/2005 Wollongong On Campus

Subject Description: The student will undertake a research project on a topic in Biotechnology and present a research report and seminar on a topic chosen by the supervising staff. The research can be undertaken in collaboration with industry or another recognised institution.**BIOL992 Literature Review Project 12cp**

Autumn/Spring Wollongong On Campus

Summer 2004/2005 Wollongong On Campus

Assessment: Literature report; Seminar; Other assessment as directed by the Head of Department**Subject Description:** Under the supervision of staff (nominated by the Masters Coordinator) the student will survey the biological literature and present a written report and a seminar on a topic chosen by the supervisory academic.**BIOL993 Research Project 12cp**

Autumn/Spring Wollongong On Campus

Summer 2004/2005 Wollongong On Campus

Assessment: Supervisor's assessment 5%; Seminar 20%; Project report 75%**Subject Description:** Under the supervision of staff (nominated by the Masters Coordinator) the student will undertake a research project and present a written report and a seminar on a topic chosen by the supervising staff. Students enrolled in this subject are assumed to have a knowledge of biology commensurate with that expected of a life sciences BSc graduate. Before enrolling in this subject, students need to identify a supervisor and an appropriate research project.**CHEM910 Research Skills Training 12cp**

Annual Wollongong On Campus

Autumn/Spring Wollongong On Campus

Exclusions: Not to count with CHEM411 or CHEM911**Assessment:** Written/oral assignments and examinations (as appropriate). Research Skills Directed Studies 67%; Generic Skills Modules 33%.**Subject Description:** This subject provides training in generic research skills such as data interpretation and analysis, library skills, literature evaluation, quality control and assurance, and Occupational Health and Safety. In addition, students will carry out directed studies in topics of advanced chemistry, chosen to complement their research interests, in discussion with the course co-ordinator.**CHEM911 Selected Topics in Chemistry 8cp**

Autumn/Spring Wollongong On Campus

Spring 04/Aut 05 Wollongong On Campus

Exclusions: Not to count with CHEM910**Assessment:** Written/oral assignments and examinations (as appropriate)**Subject Description:** This subject provides training in generic research skills such as data interpretation and analysis, library skills, literature evaluation, quality control and assurance, and Occupational Health and Safety. In addition, students will carry out directed studies in topics of advanced chemistry, chosen to complement their other subjects, in discussion with the course Co-ordinator.**CHEM915 Advanced Chemistry Laboratory Project 12cp**

Autumn/Spring Wollongong On Campus

Annual Wollongong On Campus

Contact Hours: 168 hr lab work**Assessment:** Thesis 70%; Poster 15%; Seminar 15%**Subject Description:** Under the supervision of staff appointed by the Head of Department, students will undertake a laboratory project and present a written report, poster and a seminar on a topic chosen by the supervising staff.

CHEM919 Literature Report in Chemistry 12cp**Autumn/Spring** Wollongong On Campus**Annual** Wollongong On Campus**Assessment:** Substantial report 85%; Seminar 15%**Subject Description:** Students in this subject undertake a literature search on recent advances in a research topic in chemistry. The topic is chosen in consultation with their supervisor and the course coordinator. A substantial report is the written outcome and the students meet in regular tutorials with their supervisor to discuss issues raised in the topic and compilation of the report.**CHEM923 Advanced Topics in Chemistry Part 1 (Spring) 8cp****Spring** Wollongong On Campus**Assessment:** Written/oral assignments and examinations (as appropriate)**Subject Description:** Part 1 of CHEM910**CHEM924 Advanced Topics in Chemistry Part 2 (Autumn) 8cp****Autumn** Wollongong On Campus**Pre-requisites:** CHEM923**Assessment:** Written/oral assignments and examinations (as appropriate)**Subject Description:** Part 2 of CHEM910**CHEM930 Selected Topics in Medicinal Chemistry 12cp****Annual** Wollongong On Campus**Autumn/Spring** Wollongong On Campus**Contact Hours:** 4 hr Lecture, 1 hr contact with supervisor per week**Pre-requisites:** Entry is subject to approval of Head of Department**Assessment:** Written examination; Essays (2); Seminar**Subject Description:** Specialist courses in aspects of medicinal chemistry and related areas (drug design, synthesis, pharmacology, computer modelling and structural studies). Directed Medicinal Chemistry studies, in an area related to the student's individual research project.**CHEM940 Contemporary Topics in Biomolecular Chemistry 12cp****Autumn/Spring** Wollongong On Campus**Annual** Wollongong On Campus**Contact Hours:** 6 hr Lecture/Tutorial, 4 hr Lab per week**Assessment:** Laboratory work and quizzes (20%); Written exam (40%); Written report (30%); Oral presentation (10%)**Subject Description:** This unit gives students a good grounding in modern aspects of biomolecular chemistry. The exact course of study will vary depending on the student's background and interests. It may include studies of advanced methods of synthesis; studies of molecular structure via spectroscopy and modelling; and biological chemistry and bioinformatics. In addition, students undertake a small project in which they are given a research problem in biomolecular science to solve.

This may take the form of a synthetic target or data to analyse. Students will present their findings by means of a short presentation and a report.

CHEM950 Contemporary Topics in Analytical and Environmental Chemistry 12cp**Autumn/Spring** Wollongong On Campus**Annual** Wollongong On Campus**Contact Hours:** 6 hr Lectures/Tutorials, 4 hr Lab per week**Assessment:** Laboratory work and quizzes (20%); Written exam (40%); Written report (30%); Oral presentation (10%)**Subject Description:** This unit gives students a good understanding in modern aspects of environmental chemistry and related analytical techniques. The exact course of study will vary depending on the student's background and interests. It may include modules of study of: atmospheric processes and their chemistry; water and soil chemistry and analysis; environmental sampling; instrumental analysis; Quality Control/Quality Assurance/Total Quality Management. In addition, students undertake a small project in which they are given a research problem in environmental chemistry to solve. This may take the form of a pollution or remediation/disposal problem or data to analyse. Students will present their findings by means of a short presentation and a report.**EESC901 Advanced Plate Tectonics, Macrotopography and Earth History 12cp****Autumn** Wollongong On Campus**Contact Hours:** 2 hr Lecture, Tutorials/Practicals up to 2 hr per week; 5 days field work**Assessment:** Assignment 1 20%; Assignment 2 and seminar 20%; Field trip report 1 10%; Field trip report 2 10%; Final examination 40%**Subject Description:** This subject is concerned with the theory of plate tectonics and its role in the formation of Earth structures and topography. Large-scale processes are examined in relation to the controls of topography and bathymetry. Relationships between plates and ocean basins, continental margins, continental interiors and sedimentary basins are evaluated. Earth structure is examined along with earthquakes and deformation (stress, strain, faulting and folding). Earth history is considered in relation to past mountain belts, continents and oceans. Practical work is a series of tutorials designed to reinforce the material covered in lectures. Field work consists of two field trips.**EESC902 Advanced Coastal Environments: Processes and Management 12cp****Spring** Wollongong On Campus**Contact Hours:** 2 hr Lecture, 3 hr Practical per week; Field trip**Assessment:** Class tests, essays, research project, practical work, final examination (as appropriate)**Subject Description:** This subject examines sedimentary and ecological processes on the coast. Coastal management is considered from geomorphological and ecological perspectives. Topics include the morphology and development of coastal landforms, particularly estuaries, deltas, chenier and beach-ridge plains, beaches and dunes, and coral reefs. Emphasis is placed on interpreting Holocene morphostratigraphy and morpho-dynamics, reconstructing sea-level changes and the

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effect of sea-level changes on coastal environments, and on understanding longer-term ecological and geomorphological processes.

EESC903 Advanced Fluvial Geomorphology & Sedimentology 12cp

Autumn Wollongong On Campus

Contact Hours: 3 hr Lectures, 3 hr Practical per week

Assessment: Class tests, essays, research project, practical work, final examination (as appropriate)

Subject Description: Rivers play a dynamic role in shaping the Earth's landforms (geomorphology), constructing sedimentary sequences of economic importance (sedimentology), and presenting flood and erosion hazards, all of which greatly influence human use of the Earth's surface. This subject examines processes forming and modifying contemporary drainage basins, interprets fluvial sedimentary records and relates changes in these records to variations in climate and depositional environment. Particular attention is given to human modification and the management of river systems.

EESC904 Advanced Geographic Information Science 12cp

Spring Wollongong On Campus

Contact Hours: 2 x 1hr Lectures, 1 x 3hr Practical per week

Pre-requisites:

Assessment: Class tests, essays, research project, practical work, final examination (as appropriate)

Subject Description: Geographical information Science is concerned with the theory and analysis of spatial data, particularly using GIS. Practical applications in natural resource management, urban and regional planning, pollution management, distribution of plant and animal communities, natural hazards, medical geography, economic and environmental geology and environmental impact assessment are emphasised. Topics include data acquisition, spatial databases and analysis, georeferencing, digital terrain modelling, and accuracy.

EESC905 Advanced Remote Sensing 12cp

Autumn Wollongong On Campus

Contact Hours: 2 hr Lectures, 3 hr Practical per week

Assessment: Class tests, essays, research project, practical work, final examination (as appropriate)

Subject Description: This subject examines advanced principles and techniques for identifying and mapping environmental features using images obtained from satellites and aircraft. Satellite imagery from Landsat 7 ETM, SPOT, and EO-1 Hyperion, in addition to airborne hyperspectral imagery from Hymap and CASI will be examined. Case studies will be used to illustrate the multidisciplinary scope of remote sensing. Topics include environmental monitoring, vegetation analysis, geological exploration and urban planning. Practical work involves the development of interpretation skills as well as computer-based digital analysis.

EESC910 Advanced Social Spaces: Rural and Urban 12cp

Spring Wollongong On Campus

Contact Hours: 2hr Lecture/Workshop, 2hr Practical per week

Assessment: Exam 25%, Census analysis assignment 20%, Critical analysis exercise 10%, Workshops 15%, Essay 30%

Subject Description: This subject requires postgraduate students to critically assess how geographers and others have theorised the global and national processes that shape the social, economic and spatial characteristics of Australian cities and regions. Students will build upon insights from previous study to explore how contemporary urban and rural landscapes have been formed and how they are constantly being reshaped. They will draw upon theoretical perspectives including political economy and post-structuralism to explore varying accounts of these socio-spatial processes. Examples such as industry restructuring, rural/urban mythology and the development of Australian and overseas cities will be used to make connections between processes at the various scales and specific aspects of Australian urban and rural life. Through workshops and assignments, students will further develop skills and knowledge in areas such as media analysis and the use of census and other data sources. In addition, students will complete an essay in which they evaluate theoretical perspectives on a topic chosen in conjunction with the subject co-ordinator.

EESC911 Advanced Isotope Geochemistry 12cp

Autumn Wollongong On Campus

Assessment: Essays, reports, seminars, final examination (as appropriate)

Subject Description: Topics include sample preparation; mass spectrometry; applications of both radiogenic and stable isotopic systems; geochronology modelling; petrogenetic modelling.

EESC912 Advanced Soils, Landscapes and Hydrology 12cp

Spring Wollongong On Campus

Contact Hours: 2 hr Lectures, 2 hr Practical per week

Assessment: Class tests, essays, research project, practical work, final examination (as appropriate)

Subject Description: The interdependence of landform, hydrology and soil, together with time and place, are the major factors influencing landscape evolution. This subject examines denudation of highlands; survival of ancient landscapes; climatic and geomorphic controls on landforms; erosion; weathering processes and the formation of soils, laterites, silcretes and calcretes; soil surveying; environmental records of lakes; groundwater and surface-water processes and chemistry; dating of land-surfaces and groundwater; the hydrological cycle.

EESC917 Advanced Spaces, Places and Identities 12cp

Autumn Wollongong On Campus

Contact Hours: 2hr Lecture/Tutorial, 3 hr Workshops per week

Assessment: Term paper, Exam, Seminar presentation, Research report, Interview transcript, Literature review

Subject Description: The lecture content is designed to enable postgraduate students to build upon their geographical knowledge by critically studying how geographers have conceptualised space/place. Drawing upon different approaches, this subject investigates the connections that have been made between place making processes and identity including gender, ethnic, sexual, tourist and national identity. The approaches drawn upon include structuralism and post-structuralism. Underpinning the design of the workshops is the objective that students will learn qualitative research skills. In these workshops, students are encouraged to gain proficiency in three areas: qualitative research, team-work and presentation skills. Employers often seek postgraduate students with demonstrated skills in these three areas. This subject is designed to enable postgraduate students to develop these skills.

EESC918 Advanced Environmental and Heritage Management 12cp

Spring Wollongong On Campus

Contact Hours: 2 hr Lectures, 3 hr Practical per week

Assessment: Essay 20%, Practical reports 10%, Research report 50%, Final examination 20%

Subject Description: This subject presents advanced geographic perspectives on environmental and heritage management. We examine environmental and cultural values and how they are translated into practice to protect and manage landscapes, places, resources and ecosystems. Consequently, the subject will consider definitions of concepts such as environment, nature and heritage as well as legislative and policy frameworks in Australia and overseas. These themes will be pursued through studies of issues such as indigenous land and heritage management, wilderness identification and management, catchment management and restoration of ecosystems and the built environment. The subject is suitable for practitioners seeking to update their academic knowledge as well as for postgraduate students wanting to further develop their applied research skills.

EESC921 Advanced Environmental Geology 12cp

Spring Wollongong On Campus

Contact Hours: 42 hr per session, plus field work

Assessment: Essays, reports, seminars, final examination (as appropriate)

Subject Description: Topics include the relationship between mining operations and communities; downstream pollution problems; mineralogical composition and types of associated dusts; composition of mine waters and stack emissions, the reclamation of mine sites; effects of mine subsidence; the composition, uses and disposal of waste residues; environmental impact studies; alienation of resources; conflicts of interest in mining operations.

EESC950 Advanced Topic A 12cp

Autumn/Spring Wollongong On Campus

Annual Wollongong On Campus

Assessment: Essays, reports, seminars, final examination (as appropriate)

Subject Description: This project will consist of a library and/or laboratory study on some topical aspect of earth and

environmental sciences equivalent to one third of full-time study.

EESC951 Advanced Topic B 8cp

Autumn/Spring Wollongong On Campus

Annual Wollongong On Campus

Assessment: Essays, reports, seminars, final examination (as appropriate)

Subject Description: This project will consist of a library and/or laboratory study on some topical aspect of earth and environmental sciences equivalent to one third of full-time study.

ENVE985 Environmental Engineering 8cp

Autumn Wollongong On Campus

Assessment: Laboratory Reports and Examinations

Subject Description: This subject takes an engineering approach to solving problems in air, noise and water pollution. It considers the sources, effects and methods of control of the pollutants, as well as legislative requirements. The lecture and tutorial components of this subject are complemented by extensive field and laboratory sampling, measuring and analysis.

ENVI910 Directed Studies in Environmental Chemistry 12cp

Spring/Autumn Wollongong On Campus

Annual Wollongong On Campus

Contact Hours: See office door for availability or by appointment

Pre-requisites: Must be enrolled in Environmental Science Postgraduate program

Assessment: Continuous assessment, Final exam, Major case study report

Subject Description: The chemistry of water and air pollution. Toxins in the environment. Sources, sinks and transport processes, methods for quantitative measurement and control.

ENVI911 Directed Studies in Ecology 12cp

Autumn/Spring Wollongong On Campus

Annual Wollongong On Campus

Contact Hours: 26 hr Laboratory, 13 hr Tutorial project

Pre-requisites: Must be enrolled in Environmental Science Postgraduate program

Assessment: Continuous assessment and final examinations for coursework (autumn session); Major case study report and seminar (either session)

Subject Description: This subject includes a coursework component and an independent research component. The coursework provides an introduction to the basics of Biology and the principles of ecology and evolution, including the diversity of organisms, population growth and interactions, principles of evolution, impacts of humans on ecosystems. The research project focusses on a current issue in field work, analysis and communication.

ENVI912 Directed Studies in Land Resources 12cp**Annual** Wollongong On Campus**Autumn/Spring** Wollongong On Campus**Pre-requisites:** Must be enrolled in Environmental Science Postgraduate program**Subject Description:** This subject will examine coastal, river, water and soil managements focussing on human induced changes to these natural systems. Emphasis will be given to geomorphological processes, remote sensing of land and biological resources.**ENVI913 Directed Studies in Earth Sciences 12cp****Annual** Wollongong On Campus**Autumn/Spring** Wollongong On Campus**Pre-requisites:** Must be enrolled in Environmental Science Postgraduate program**Subject Description:** Topics include the relationship of mining operations to communities; composition of mine waters, dusts and stack emissions; reclamation of mine sites; effects of mine subsidence; the composition, uses and disposal of waste residues; environmental effects of pollution, erosion and deposition; environmental impact studies.**ENVI919 Directed Studies in Environmental Science 12cp****Autumn/Spring** Wollongong On Campus**Annual** Wollongong On Campus**Summer 2004/2005** Wollongong On Campus**Pre-requisites:** Must be enrolled in Environmental Science Postgraduate program or with permission of the Head of Environmental Science.**Assessment:** Major written report based on work completed**Subject Description:** In this subject students will undertake either a major literature review or carry out a practical study on a problem of current environmental interest. The work will normally be related to one of the ongoing activities of the Unit, giving the student the opportunity to become well acquainted with a particular aspect of environmental science. International students will be encouraged to undertake activities with significant relevance to their home countries.**ENVI920 Scientific Basis of Environmental Management 8cp****Spring** Wollongong On Campus**Contact Hours:** 2 x 2 hr Lectures per week, At least one field trip**Pre-requisites:** Must be enrolled in MEnvSc**Subject Description:** This course gives a comprehensive overview, with case studies, of the scientific basis of environmental management by adopting a multi-disciplinary approach to the scientific understanding of how major ecosystems work. The science of aquatic, alpine, forest, grassland and semi-arid environments, along with hazardous waste (including radioactive) management will be amongst those discussed. Students will complete a team project that develops interdisciplinary skills in addressing appropriate management strategies.**ENVI921 Environmental Planning 8cp****Autumn** Wollongong On Campus**Contact Hours:** By appointment with Professor John Morrison**Subject Description:** This course presents a comprehensive overview of environmental planning in government and industry. Students are introduced to the basic principles followed by presentations from staff from a wide range of organisations involved in environmental planning. The mechanisms, difficulties and benefits of current planning activities in Australia are explained. While the emphasis is on the Australian situation, reference to activities in other countries and the global situation of environmental planning is included.**ENVI930 Thesis 24cp****Autumn/Spring** Wollongong On Campus**Annual** Wollongong On Campus**Contact Hours:** By appointment with coordinator**Subject Description:** A research topic in an area of environmental science will be selected by each candidate after consultation with the degree co-ordinator. The thesis will be supervised by staff from the appropriate department or departments.**ENVI931 Thesis 32cp****Annual** Wollongong On Campus**Subject Description:** A research topic in an area of environmental science will be selected by each candidate after consultation with the degree co-ordinator. The thesis will be supervised by staff from the appropriate department or departments.**MARE957 Advanced Topics in Molluscan Biology 12cp****Summer 2004/2005** Wollongong On Campus**Contact Hours:** 10hr Lecture/Tutorial per week for 2 weeks, 20hr Practical & Field Excursions per week for 2 weeks**Pre-requisites:** BIOL241 (or equivalent)**Assessment:** theory examinations; research project reports and presentation; literature review/critique**Subject Description:** This subject will provide an overview of molluscan biology, diversity and phylogeny. It will also examine the role of molluscs in fisheries, aquaculture, as pests and as carriers of disease. Consideration will be given to these aspects of molluscan biology worldwide, but there will also be a focus on the largely endemic Australian fauna. Each of the major groups of molluscs will be examined, including polyplacophorans (chitons), bivalves (e.g. clams and oysters), gastropods (e.g. slugs and snails) and finally the cephalopods (including octopuses and squid). For each group, their conservation, ecology, biology and evolutionary relationships will be addressed, with important current issues and research directions highlighted. The course will provide training in field techniques, identification, lab studies including dissection and accessing resources. It will include the observation and collection of molluscs in a variety of habitats, including the rocky shore, estuarine and rainforest environments. Literature examining contemporary research in molluscs will also be reviewed (tailored to the specialisations of MSc students enrolled in the subject).

MARE973 Advanced Topics in Fisheries and Aquaculture 12cp**Spring** Wollongong On Campus**Contact Hours:** 2 hr Lecture; 4 hr Tutorial/Practical per week**Assessment:** Theory examinations; Research project reports and presentation; Literature review/critique**Subject Description:** This subject will provide an overview of fisheries biology and aquaculture (vertebrate and invertebrate) including: the diversity of Australian and international fisheries and their key challenges; relevant ecological issues (population dynamics, transport processes, stock identification); predictive modelling, fisheries management; secondary impacts of fisheries; the diversity of aquaculture; case studies in aquaculture; ecological impacts, potential for enhancement of fisheries. Literature review examining contemporary research in ecology (tailored to the specialisations of MSc students enrolled in the subject).