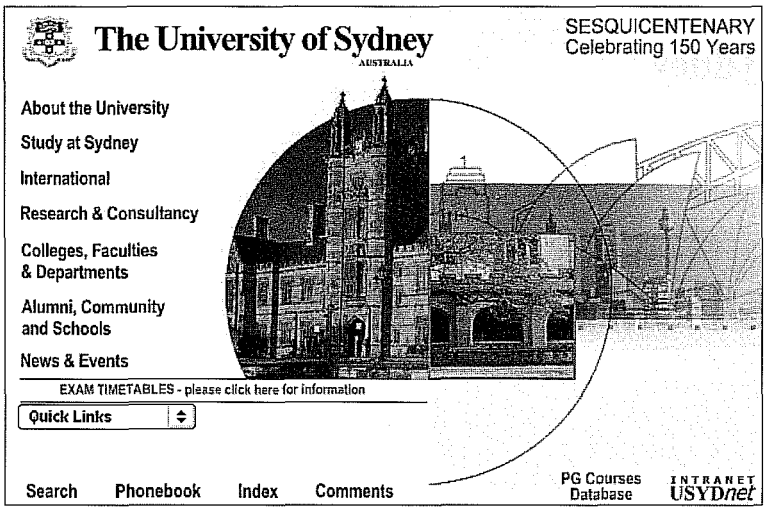
The University of Sydney

Faculty of Agriculture Handbook 2001



The University's web site details courses at Sydney, some careers they can lead to, and what university life is like. The interactive site, with video and sound clips, has links to the University's faculties and departments. You can explore the University of Sydney on the web at www.usyd.edu.au.

Communications should be addressed to:
The University of Sydney, NSW 2006.
Phone: (02) 9351 2222

Faculty of Agriculture
Phone: (02) 9351 6926
Fax: (02) 9351 2945

University semester and vacation dates 2001

Semester 1 lectures begin	Monday 26 February
Easter recess	
Last day of lectures	Thursday 12 April
Lectures resume	Monday 23 April
Study vacation: 1 week beginning	Monday 11 June
Examinations commence	Monday 18 June
Semester 1 ends	Saturday 30 June
Semester 2 lectures begin	Monday 23 July
Mid-semester recess	
Last day of lectures	Friday 21 September
Lectures resume	Tuesday 2 October
Study vacation: 1 week beginning	Monday 5 November
Examinations commence	Monday 12 November
Semester 2 ends	Saturday 1 December

Last dates for withdrawal or discontinuation 2001

Semester 1 units of study	
Last day to add a unit	Friday 9 March
Last day for withdrawal	Friday 30 March
Last day to discontinue without failure (DNF)	Thursday 12 April
Last day to discontinue (Discontinued --Fail)	Friday 8 June
Semester 2 units of study	
Last day to add a unit	Friday 3 August
Last day for withdrawal	Friday 31 August
Last day to discontinue without failure (DNF)	Friday 7 September
Last day to discontinue (Discontinued --Fail)	Friday 2 November
Full Year units of study	
Last day for withdrawal	Friday 30 March
Last day to discontinue without failure (DNF)	Friday 27 July
Last day to discontinue (Discontinued --Fail)	Friday 2 November

Academic year information (Academic Board policy and dates 1998-2002) is available at: www. usyd. edu.au/su/planning/policy/acad/3_0aca. html

The University of Sydney Faculty of Agriculture Handbook 2001

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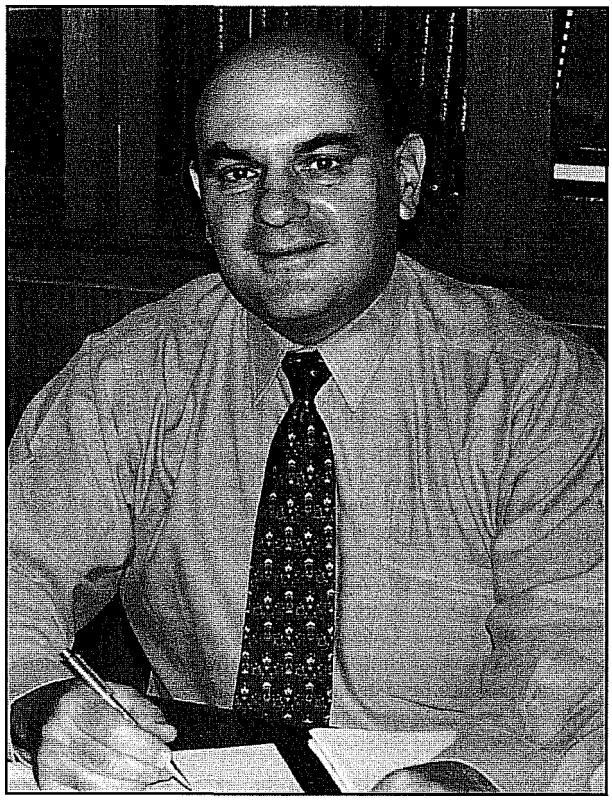
Contents

Welcome from the Dean



The management of our natural resources so as to ensure the sustainable production of food and fibre is vital to the future of the planet. Highly trained and dedicated graduates are crucial to the task of conserving and protecting these resources while meeting the needs of a global community expected to double by the year 2050.

The Faculty is training graduates to respond to these challenges through its range of degrees in agricultural and resources science and economics. Our graduates have outstanding employment rates and take advantage of diverse career opportunities in the rural and related industries and in the management and conservation of our natural resources.

Australian agriculture is highly efficient and environmentally aware and is a major contributor to our nation's prosperity. However, there are many challenges and problems that will require attention in the decade ahead.

The conservation of our soils depends on research by soil physicists, agronomists and effective information transfer systems. All these are areas in which graduates in agricultural science can play vital roles. The activities of the Student Landcare Group complement formal coursework in the development of students' understanding of the complexity of sustainable land management.

Molecular genetics offers great potential for facilitating the incorporation of desirable genes into new plant cultivars. For example, transgenic plants which have genes for resistance to disease and insect pests represent a new form of biological control. The University of Sydney is involved in training research scientists who are skilled in various techniques of plant breeding, including genetic engineering, tissue culture and traditional breeding methods. Furthermore, there is significant scope for the application of molecular biology in the improvement and conservation of our genetic stocks of animals, and in the development of vaccines.

There is considerable concern about the impact of pesticides on the environment and the presence of residues in food. Consequently, there are significant career opportunities in research and consulting into practices designed to reduce pesticide use. Courses concerned with environmental chemistry prepare graduates for work in these areas. The development of efficient processes for adding value to our primary products for export offers a major challenge to graduates in agricultural chemistry.

Graduates in horticultural science work predominantly in the private sector in a wide variety of production and processing businesses, and in marketing and consulting roles to improve production, packaging, processing and the quality of fresh foods. Graduates who specialise in amenity horticulture play an important role in the management of plants and plant ecosystems within the urban environment.

The sound management of agriculture requires more than good science. Economic research is needed to assess the social costs and benefits of alternative agricultural practices and to establish appropriate policies for using our natural resources. There are exciting challenges ahead for graduates interested in agricultural marketing and exports with new opportunities in Asia and the gradual breakdown of trade barriers.

Competition for water and land is becoming acute, both in Australia and overseas. The development of sensible government policies concerning land and water use, and the conservation of biodiversity depends on rigorous socioeconomic research. Our graduates excel in such areas.

Excursions provide opportunities for students to visit the major agroclimatic regions of New South Wales, the Northern Territory, Queensland and Southeast Asia. The Faculty has a well established Undergraduate Achievers' Program. Students have the opportunity to compete for places in the International Student Exchange Program. Our undergraduates in this program have recently studied for a year at the University of California, Davis and Berkeley, the University of Illinois, and Guelph University, Canada. Such experiences are highly valued by employers.

The Faculty of Agriculture has an outstanding international reputation for its teaching and research. It has extensive resources on the Sydney campus and at Camden where facilities are located for poultry and large animal research and for horticultural and agronomic research. In addition, a Plant Breeding Institute at Camden provides teaching in advanced plant molecular biology and biotechnology. Postgraduate teaching and research is also undertaken at the LA. Watson Grains Research Centre, Narrabri. The Faculty is also involved in international development activities and at present has major teaching and research projects in Vietnam.

The Faculty is one of the largest Faculties of Agriculture in Australia, but is relatively small by University of Sydney standards. Students have greater access to staff than in larger faculties and the student body is an active and socially cohesive group. These features promote a warm and friendly atmosphere which is conducive to intellectual and social development. Students are encouraged to take advantage of the wide range of extracurricular activities available on campus.

This handbook provides general information about the Faculty and more specific details concerning units of study available in each of the degree programs. Further information and advice can be obtained from Faculty advisers.

I am delighted to welcome you to the Faculty of Agriculture and extend my best wishes to you in your studies and future professional career.

Les Copeland, Dean.

CHAPTER 1

Guide to the Faculty

Faculty Office

Phone: (02) 9351 2935
Fax: (02) 9351 2945
Email: agriculture@agec.usyd.edu.au
Web: www.agric.usyd.edu.au/

Faculty staff

Dean
Les Copeland
Associate Deans
Robert A. Caldwell
M Robyn McConchie
Frank W Nicholas
Carolyn Tanner
Secretary to the Faculty
Robert Jeffs, BA *Waterloo Lutheran Univ.*
Administrative Officer (Development)
Michele Gairn, DipAppSc(Agr) *Wagga Agric.Coll.* DipEd
Secretary to the Dean (Faculty Office)
Kaye Scholium
Administrative Assistant
Pamela J. Stern, BA *U.N.S.W.*

Department staff

Agricultural Chemistry and Soil Science

Phone: (02) 9351 2439
Fax: (02) 9351 5108
Email: hod@acss.usyd.edu.au
Web: www.usyd.edu.au/su/agric/
Head of Department: Associate Professor L Copeland
Professor in Soil Science
Alexander B. McBratney, DSc PhD *Aberd.* Appointed 1995
Personal Chair in Agricultural and Environmental Chemistry
Ivan R. Kennedy, PhD DSc(Agric) *W.Aust.*, FRACI CChem. Appointed 1996
Associate Professor
Les Copeland, BSc PhD, MRACI CChem
Senior Lecturers
Robert A. Caldwell, MSc PhD, MRACI CChem
Edith M. Lees, BSc PhD *Lond.*
Lecturer
Stephen R. Cattle, BScAgr PhD
Balwant Singh, BSc(Agric), MSc(SoilSc) *Haryana*, PhD *WAust.*
McCaughey Lecturer in Hydrology and Catchment Management
Willem Vervoort, JIR *Wageningen*, PhD *Georgia*
Research Fellows
Nanju Lee, BScAgr PhD
I.O.A. Odeh, BSc(Agric) *Ibadan* MSc *Ahmando Bello* PhD *Adel.*
Paco Sanchez-Bayo, MS, PhD *Madrid*
John Triantafilis, BScAgr, PhD
Shuo Wang, MScAgr, PhD
Brett Whelan, BScAgr PhD
Honorary Appointments
Emeritus Professor
N. Collis-George, BSc *Mane.* PhD *Camb.* HonDScAgr, FRSChem
Honorary Research Associates
Rodney J. Roughley, PhD *Lond.* MScAgr
Harold R Geering, MS *Cornell*
Norman K Matheson, PhD *Edin* MSc

Agricultural Economics

Phone: (02) 9351 2574
Fax: (02) 9351 4953
Email: hod.agec@agec.usyd.edu.au
Web: www.usyd.edu.au/su/agec/
Head of Department: Professor T Gordon MacAulay
Professor
T. Gordon MacAulay, MAgrSc *Melb.* PhD *Guelph.* Appointed 1992
Associate Professors
Fredoun Z. Ahmadi-Esfahani, BS *OregonMASan Francisco State* PhD *Manit.*
Robert L. Batterham, BAgEc *N.E.* MS PhD *Ill.*
Ross G. Drynan, BAgrSc *Qld* PhD *N.E.*
Senior Lecturers
David P. Godden, BAgEc BA MEc *N.E.* PhD *Lond.*
Carolyn Tanner, BScAgr
Guang Hua Wan, BAgEc *Nanjing Agric. Univ.* MEc PhD *N.E.*
Associate Lecturers
Lynn A. Henry, BEc Dip AgEc *N.E.*
Shauna L. Phillips, MComm *N.S. W* BAgrEc
First Year Adviser
Elizabeth Nolan, BScAgr
Research Fellows
Sally Marsh, BSc(Agric), MSc(Agric) *W.Aust*
Kate Owen, BBus *K.C.A.E* BEcon PhD *N.E.*
Administrative Assistant
Prue Winkler, BA *N'cle (NSW)*
Emeritus Professor
K.O. Campbell, AM PhD *Chic.* MPA *Harv.* HonDEc *N.E.* HonDAgrSc BScAgr, FASSA

Animal Science

Phone: (02) 9351 2464
Fax: (02) 9351 3957
Email: chism@vetsci.usyd.edu.au
Web: www.vetsci.su.oz.au/
Head of Department: Associate Professor Chis Maxwell

Sydney

Professor
David Ross Fraser, PhD *Camb.* BVSc Appointed 1986
Adjunct Professor
J. Black, PhD *Melb.*
Associate Professors
Gareth Evans, BA *Oxf.* PhD
Chis Maxwell, BScAgr PhD
Christopher Moran, PhD *A.N. U.* BSc
Frank W. Nicholas, PhD *Edin.* BScAgr
Senior Lecturer
David L. Evans, BVSc PhD
Rosanne M. Taylor, BVSc PhD
Lecturers
Melanie Collier, BSc PhD *Leeds*
Michelle L. Hyde, BScAgr PhD
Paul McGreevy, BVSc PhD *Brist.*
Senior Technical Officers
Kim Heasman
Irene van Ekris, BSc *J.C.U.*
Angelika Trube
Technical Officers
Dung T. Doan
Helen Hughes
Kerry Murdoch
Andrew Souter
Administrative Assistant
Margaret Byrne

Camden

Associate Professors
Derick Balnave, PhD DSc *Belf*, FRSChem
Wayne L. Bryden, MRurSc DipEd *N.E.* PhD
Peter C. Wynn, MRurSc DipEd *N.E.* PhD
Senior Technical Officer
Chris Stimson
Technical Officers
Neville Catt
Sherry Catt
John McClure
Kim McKean
Kaylene A. Scrimgeour
Administrative Assistants
Elizabeth Thomas
Animal Attendant
Melinda Jones
Emeritus Professors
E.F. Annison, PhD DSc Lond.
T.J. Robinson, MScAgr *WAust* PhD *Cantab* ScD *Cantab*
D.A. Titchen, MA PhD ScD *Camb.* BVSc
Honorary Associates
J. Catt, PhD *EastAnglia*
W J. Fulkerson, BAgrSc *W.Aust* PhD
R. Giles, PhD
H. Greenfield, BSc(Hons) PhD *Lond.* RPHNutr *UK*
P. J. Healy, BVSc PhD
A. Jackson, PhD *Monash*
R.C. Kellaway, BSc(Hort) *Lond.* PhD *N.E.* DTA *W.I.*
Y.C. Kong, DSc *Bruxelles*
I.C.A. Martin, BVSc PhD
G. Moser, PhD *Hohenheim*
J. Newby, BVMS *W.Aust*
E.J. Post, BSc PhD
K. Seksel, MA *Macq.*
B.L. Sheldon, BAgrSc PhD
Grant M. Stone, BScAgr PhD
P. Williamson, BSc(Hons) *UNE PhD*
D. Zhang, BSc *Jilin* MSc *Northeast Agr* P.R.C. PhD

Crop Sciences

Phone: (02) 9351 2529
Fax: (02) 9351 4172
Email: roseh@agric.usyd.edu.au
Web: www.cropsci.usyd.edu.au/
Head of Department: Associate Professor H A Rose
Professor of Applied Mycology
Lester W. Burgess, BScAgr PhD DipEd
Appointed 2000
Reader
Peter B. Goodwin, PhD *Nott.* MScAgr
Associate Professors
Michael E. O'Neill, BA PhD
Harley A. Rose, MAgrSc *Qld PhD Cornell*
Senior Lecturers
John W Bowyer, BAgrSc PhD *Qld*
Lindsay C. Campbell, BSc PhD
Brent C. Jacobs, BScAgr PhD
Dennis R. de Kantzow, BScAgr DipAgrEc, FAIST
Bruce G. Sutton, BScAgr *Qld* PhD *A.N. U.*
Peter C. Thomson, MSc MAppStat *Macq.* PhD
Lecturers
M. Robyn McConchie, BSc *Lond.* MA(Ed) *Macq.* PhD *L.S. U.*
Emeritus Professor
B.D.H. Latter, PhD *Edin.* BScAgr
Senior Research Fellow
A.D. Clift, BScAgr PhD
Research Fellows
E K Dann, BScAgr, PhD
Yong Huang, PhD
Honorary Research Associates
G.D. Batten, PhD *A.N.U.*
CConstable, PhD *A.N.U.,* MScAgr
G.M. Cunningham, BScAgr
D.J. Fletcher, MSc *U.W.A.,* PhD *Macq*
C.Green, BSc, PhD *London*
M.R.B. Gray, MSc *U.W.A.,* PhD *S'ton*
J.J. Jobling, BScAgr, PhD *U.W.S.*
P.W. Michael, B AgSc, PhD *Adel.*
J.R. Pym
L.W. Smith, BAgSc *Melb.* MSc PhD *Calif.*
B.A. Summerell, BScAgr PhD
P.T.W. Wong, BScAgr PhD

Microbiology

Phone: (02) 9351 2536
Fax: (02) 9351 4571
Email: hod.micro@microbio.usyd.edu.au
Web: www.microbio.usyd.edu.au
Head of Department: Professor Peter R. Reeves
Professor
Peter Richard Reeves, BSc PhD *Lond.,* MASM.
Appointed 1985
Reader
Thomas Ferenci, BSc *Lond.* PhD Leic.
Senior Lecturers
Deidre A. Carter, BSc *Otago* PhD *Lond.*
Trevor Duxbury, BSc PhD *Liv.,* MASM
Peter B. New, BAgrSc *Tas.* PhD *Adel,* MASM
Lecturer
Helen M. Agus, MSc *U.N.S.W.,* MASM
Ilze Dalins, MSc
Honorary Research Associates
Kai Yip Cho, BSc *U.N.S. W.* PhD *A.N. U.*
WG. Murrell, DPhil *Oxon.* DScAgr, FAJPST MASM
Post Doctoral Fellows
Ruiting Lan, BScAgr *Jiangxi* PhD
Lai Wang, BSc *Nankai* PhD

Plant Breeding Institute

Cobbitty
Director and Professor of Plant Breeding
Donald R. Marshall, PhD *Calif.* BScAgr. Appointed 1991
Professor in Cereal Genetics and Cytogenetics (Personal Chair) and Director of Rust Research
Robert A. Mcintosh, MScAgr PhD. Appointed 1993
Adjunct Professor in Industrial Plant Breeding
N.F. Derera, AM DipAgrSc Royal Jozef Nador DipPlt Breeding *U. of Tech. Budapest,* FAIAS
Adjunct Professor in Cereal Quality
W Rathmell, MA *Camb,* PhD *Camb*
Senior Lecturers
Norman L. Darvey, PhD *U.N.S. W* BSc
Peter J. Sharp, B AgSc PhD *Adel.*
Senior Research Fellow
Robert F. Park, BSc *LaT.* PhD *Qld*
Research Fellows
Harbans S. Bariana, MScAgr *Punj.* PhD
Frederick L. Stoddard, BSc Car. MSc *Ott.* PhD *Camb.*
Postdoctoral Fellow
Mohammad Reza Shariflou, BAgSc MAnSc *Tehran* PhD
Professional Officer Grade TV
John D. Oates, OAM, BScAgr
Honorary Research Associates
R. Appels, BSc PhD *Adel.*
J.L. Davidson, MAgSc *Adel.* PhD *Nott.*

Narrabri

Director, LA. Watson Grains Research Centre
Lindsay O'Brien, MSc DipEd *Melb.* PhD *Manit.*
Senior Plant Breeder
Frank W.H. Ellison, MScAgr PhD
Principal Research Fellow
Daryl J. Mares, BSc PhD *Melb.*
Research Fellow
Kolumbina Mrva, BSc *MAgr Zagreb,* PhD

Postdoctoral Fellows
David G. Bonnett, BScAgr PhD
Shakir Shah, BSc *Rawalpindi* MSc *Faisalabad* PhD *Calif.*
Professional Officer Grade III
Stephen G. Moore, BSc *N.E.*

CHAPTER 2

Undergraduate degrees

Brief introduction to degree courses

Bachelor of Agricultural Economics

(Part-time study, day time only, may be available in certain circumstances)

Assumed Knowledge: 2 u Mathematics (not Maths in Society)

The focus of the degree is on the development of analytical, quantitative, computing and communication skills with an emphasis on commodity markets and agricultural and natural resource issues. Skills highly regarded by employers are gained in fourth year through the completion of a research thesis, research project reports or research exercises. A wide range of optional courses is available.

Major studies: Include: accounting, agribusiness management, agricultural economics, agricultural science, applied marketing, applied trade, agricultural policy, Asian studies, commercial law, econometrics, economics, finance, geography, government, marketing, natural resource economics.

Professional Experience: You must complete 18 weeks of approved professional experience and field excursions before graduation. Overseas experience is encouraged.

Professional Recognition: Undergraduates and graduates are eligible for membership of The Australian Agricultural and Resource Economics Society, The Economic Society of Australia and The Agribusiness Association of Australia.

Career Opportunities: Graduates have been employed as applied economists and researchers with: commodity and futures brokers, merchant banks and trading banks; Department of Agriculture, Fisheries and Forestry, ABARE, Meat and Livestock Australia, Productivity Commission, the FAO, the OECD and the World Bank; accounting firms; management consultants with international agencies; agribusiness firms; the wider business community; large corporate farms; and economic journalism.

Bachelor of Land and Water Science

(Part-time study, day time only, may be available in certain circumstances)

Assumed knowledge: 2u Mathematics (not Maths in Society) *and either* (2u Chemistry and 2u Physics) *or* 3u Sc ience or 4u Science.

The course has a strong scientific base. The focus of this four year applied degree is on the development of analytical, quantitative, computing and communication skills. Students learn how to apply the knowledge and principles of science to the understanding, management and conservation of our land and water resources. Highly regarded skills are gained in the fourth year through the completion of a research thesis.

Major studies: will include basic and applied aspects of biology, chemistry, ecology, geography, geographic information systems, geology, hydrology, soil science, statistics, sustainable agriculture and resource economics relevant to land and water science.

Professional experience: Completion of approved professional experience and field excursions before graduation will be a requirement of the course.

Career Opportunities: include technical experts and researchers in land and water conservation, environmental assessment, remediation and protection, landcare, total catchment management; environmental consultants; media researchers and journalists; national parks and wildlife services; educators.

Bachelor of Horticultural Science

(Part-time study, day time only, may be available in certain circumstances)

Assumed Knowledge: 2 u Mathematics (not Maths in Society)) *and either* (2 u Chemistry and 2 u Physics) *or* 3 u Science or 4 u Science.

The course has a strong scientific base. The focus of the degree is on the development of analytical, quantitative, computing and communication skills. Highly regarded skills are gained in the fourth year through the completion of a research thesis.

Production horticulture deals with the application of scientific and economic principles to all phases of the production, postharvest care and marketing of fruit, vegetables, cut flowers and nursery stock. Urban/Amenity horticulture deals with the horticultural and ecological aspects of the management of parks, sports fields and golf courses, as well as plantings for streets etc. Environmental impact deals with habitat preservation and *ex-situ* conservation of rare and endangered species including their marketing; strategies for integrated management for control of pests, diseases and weeds; and environmental legislation and testing.

Major Studies:Includes production horticulture, postharvest biology and technology of horticulture crops, urban horticulture and their environmental impact; soil science, agricultural chemistry, agricultural economics, agricultural entomology, agricultural genetics, agricultural microbiology, agronomy, biometry, plant pathology.

Professional Experience: You must complete 18 weeks approved professional experience and field excursions with a focus towards horticultural production industries (temperate, sub-tropical and tropical). Overseas experience is encouraged.

Professional Recognition: For admission to professional membership by The Australian Society of Horticultural Science and The Australian Institute of Agricultural Science.

Career Opportunities: Examples include employment in horticultural research, horticultural consultancy, management of horticultural enterprises and as horticultural advisers with private, state and local government bodies. Opportunities exist in production horticulture, postharvest technology, urban/ amenity horticulture, sustainable horticulture, horticultural biotechnology, precision horticulture, viticulture, environmental impact analysis, endangered species conservation, habitat preservation, ornamental plant breeding for the world market, crop protection, plant ecology and irrigation science.

Bachelor of Resource Economics

(Part-time study, day time only, may be available)

Assumed knowledge: 3u Mathematics and either 2u Chemistry or 2u Physics or 3u Science.

Major studies: For example, environmental economics, bio-economic modelling, commodity trade and market analysis, fishery economics, forestry economics, minerals and energy economics.

Professional Experience: You must complete 18 weeks approved professional experience and field excursions. Overseas experience is encouraged.

Professional Recognition: Graduates and undergraduates are eligible for membership of the Australian Agricultural and Resource Economics Society and the Economic Society of Australia, the Australia and New Zealand Society of Ecological Economics and the Australian Institute of Agricultural Science and Technology.

Career Opportunities: Include environmental consulting firms, "green" organisations, mining and energy companies. State and Federal government opportunities include environmental agencies, land and water departments, agriculture departments, fisheries and forestry authorities. Economic analysis skills are transferable, allowing employment as economists in any sector of the economy.

Additional Information: A unique applied economics degree which blends a basic science foundation with a strong disciplinary base in economics. Units are drawn from Economics, Agriculture and Science. All students will take a year of basic science, complete sequences in economics, resource economics, and quantitative analytical economics; undertake electives in economics and/or science; and examine a wide range of natural resource management problems. Students will specialise in and complete a research project in a selected sub-field of economics.

The focus is in developing broadly applicable analytical economic skills complemented with an adequate knowledge of ecological and other resource systems and skills in modelling those systems in order to contribute to the solution of challenging environmental and management problems.

The course is targeted at students interested in: economic management of natural resources systems, fishery & forestry economics, ecosystems, conservation issues, and sustainability.

Bachelor of Science in Agriculture

(Part-time study, day time only, may be available in certain circumstances)

Assumed knowledge: 2 u Mathematics (not Maths in Society) *and either* (2 u Chemistry and 2 u Physics) *or* 3 u Science or 4 u Science.

The course has a strong scientific base and offers a broad training in the scientific disciplines. The focus of this four year applied degree is on the development of analytical, quantitative, computing and communication skills. Students learn how to apply the knowledge and principles of science to the understanding and management of the production and processing and marketing of agricultural products, and to the management and conservation of our natural resources. Highly regarded skills are gained in the fourth year through the completion of a research diesis.

Major studies: agricultural chemistry, agricultural economics, agricultural entomology, agricultural genetics, agricultural microbiology, agribusiness, agronomy, animal production, biometry, cereal science, horticultural science, plant pathology, resource economics, soil science. Special interdisciplinary programs may also be approved in fourth year.

Professional experience: You must complete 18 weeks of approved professional experience and field excursions before graduation.

Professional Recognition: Professional membership of The Australian Institute of Agricultural Science.

Career Opportunities: Examples include Environmental scientists or research scientists in: environmental protection, land and water conservation, conservation of endangered species, sustainable agriculture, precision agriculture, plant breeding, horticulture, agronomy, integrated pest management, animal nutrition, molecular genetics (plant, animal and human), forensic science (animal and human); medical researchers; reproductive technologists in animal production enterprises and IVF clinics; biotechnologists (plant, animal and microbial); microbiologists (industrial and environmental); food scientists and cereal chemists; feedlot managers, managers of large scale intensive and extensive animal production enterprises; agricultural consultants (domestic and international); statisticians; media researchers and journalists; personnel for: biosoil programs, environmental protection groups, national parks and wildlife service and the forestry commissions; educators; applied marketing and agribusiness management.

Unit of study details for each degree course can be found in the Units of Study descriptions chapters of this book.

Progress through the years

Under normal circumstances, the degree requirements may be satisfied in four years. If you fail to achieve a satisfactory standard in a unit of study at the first attempt, you may repeat the unit. Should you not achieve a satisfactory standard at the second attempt, you must provide compelling evidence as to why you should be re-admitted to that unit of study and/or degree (see 'satisfactory progress' in Chapter 8). Students repeating units of study which belong to the First, Second or Third Year groups of units of study and may, with the permission of the Faculty, enrol in one or more units of study prescribed for the next higher year. The Faculty will normally grant permission for you to undertake units from the next year when:

(i) the timetable arrangements are such that you can attend all lectures, practical classes, tutorials, seminars and excursions in all of the units of study undertaken;
(ii)you have fulfilled all of the prerequisites; and
(iii)you can satisfy the corequisites for the units belonging to the higher year group of units.

Prerequisites are units of study which you must pass before proceeding to another unit.

Corequisites are units of study which should be studied in the same year as another unit if you have not already passed in them.

In the year groupings on the following pages, prerequisites and corequisites for each of the specified units of study are listed. There are circumstances, however, in which the Faculty may waive the formal prerequisite and corequisite requirements if you are otherwise suitably qualified to enrol for a unit. The onus is on students to consult the various departments as to the waivers which may be granted for each unit. The approval of the Head of Department must be obtained before you can proceed to a unit of study unless you have passed the necessary prerequisites.

Bachelor of Agricultural Economics

Unit of study	Credit points	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered

The degree of Bachelor of Agricultural Economics is available for those wishing to specialise in the field of agricultural economics. Regulations governing candidature for the BAgrEc degree are set out in the Resolutions (See Section 8). The degree requires a minimum time of four years. The courses prescribed are summarised below.

■ First Year

AGEC 1001	Agricultural Economics 1A	6	A) HSC 2 unit Mathematics.	*February*
AGEC 1002	Agricultural Economics IB	6	A) HSC 2 unit Mathematics. C) AGEC1001.	*July*
ECMT 1013	Econometrics IA Stream 3	6	A) 2 unit Maths. N) MATH 1005, MATH 1905.	*February, July. January (short)*
ECMT 1023	Econometrics IB Stream 3	6	A) 2 unit Maths. C) ECMT 1013. N) MATH 1005, MATH 1905. *NB: Other than in exceptional circumstances, it is strongly recommended that students do not undertake Econometrics IB before attempting IA.*	*July, January (short)*
ECON 1001	Introductory Microeconomics	6	A) HSC 2 unit Mathematics.	*February, January (short)*
ECON 1002	Introductory Macroeconomics	6	A) HSC 2 unit Mathematics.	*July, January (short)*

and 12 credit points from Table 1

■ Second Year

AGEC 2001	Commodity Price Analysis 2	8	P) Agricultural Economics I or AGEC 1002 or Economic Environment of Australian Agriculture or (AGEC1003 and AGEC1004) or ECON1001.	*February*
ECON 2001	Intermediate Microeconomics	8	P) ECON 1001. C) ECMT1010. *NB: Certain combinations of Maths/Stats may substitute for Econometrics — consult Faculty.*	*February, January (short)*
ECON 2002	Intermediate Macroeconomics	8	P) ECON1002. C) ECMT1020. *NB: Certain combinations of Maths/Stats may substitute for Econometrics - consult Faculty.*	*July, January (short)*
AGEC 2003	Production Economics 2	8	P) Agricultural Economics 1 or AGEC1001 or AGEC1031 orECON2001 or Economics II or Economic Environment of Australian Agriculture or (AGEC1003 and AGEC1004).	*July*
AGEC 2005	Applied Commodity Modelling 2	4	P) Econometrics I or (ECMT1010 and ECMT1020) or (MATH 1001 and 1002 and 1003 and 1005). N) AGEC2006 and AGEC2007.	*February*

or AGEC 2006 and AGEC 2007

and a minimum of 12 credit points from Table 1 and/or Table 2

■ Third Year

AGEC 3001	Agribusiness Management 3	8	P) AGEC2003 or Economic Environment of Australian Agriculture or (AGEC 1003 and AGEC1004).	*February*

Bachelor of Agricultural Economics - continued

Unit of study	iCredit 1joints	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
AGEC 3002 Agricultural and Resource Policy	8	P) (AGEC2001 & AGEC2003) or ECON2001 or ECON2901 or Economics II.	*July*
AGEC 3004 Research Methods 3	4	P) AGEC2003 and AGEC2002 or AGEC2005 or (AGEC2006 and AGEC2007) or ECMT2021.	*July*
Two units of level 3 ECON	8+8	P) ECON2001, ECON2002.	
and a minimum of 12 credit points from Table 2			

■ **Fourth Year**

AGEC 4001 Research Project 4	16	C) Any 24 credit points from Level 4000 AGEC units.	*Full Year (starts Feb)*
AGEC 4010 Contemporary Issues 4A	4	C) AGEC4011 and at least 12 other level 4 AGEC credit points.	*February*
AGEC 4011 Contemporary Issues 4B	4	C) AGEC4010 and at least 12 other level 4 AGEC credit points.	*July*
and at least 24 credit points from			
AGEC 4003 Applied International Trade	8	P) AGEC2001 or Economics II or (ECON2001 and ECON2002) or (ECON2901 and ECON2902).	*February* .
AGEC 4004 Applied Marketing	8	P) AGEC2001 or (AGEC 1003 & AGEC 1004) or Economic Environment of Australian Agriculture or Economics II or ECON2001 or ECON2901.	*July*
AGEC 4005 Natural Resource Economics	8	P) (AGEC2001 and AGEC2003) or Economics II or (ECON2001 and ECON2002).	*July*
AGEC 4008 Quantitative Planning Methods 4	4	P) AGEC2003. C) AGEC3001 or AGEC3031.	*February*
AGEC 4009 Agricultural Finance & Risk Management 4	4	P) AGEC 2003. C) AGEC3001 or AGEC3031.	*February*
AGEC 4007 Spec Topics Agricult/Resource Economics	8		*February, July*
and 8 credit points from other coursework approved by the Head of the Department of Agricultural Economics.			

Optional units of study' in the BAgrEc degree

■ **Table 1**

ACCT 1001(i) Accounting IA	6	A) 2 unit Maths. *NB: Restricted entry (code 511500 or 521500 or 511503 or 521503 or Combined Commerce).*	*February, July*
ACCT 1002(2) Accounting IB	6	P) ACCT1001. *NB: Restricted entry (code 511500 or 521500 or 511503 or 521503 or Combined Commerce).*	*February, July, January (short)*
ACCT 1003(1) Financial Accounting Concepts	6	N) Terminating unit. Cannot be counted with ACCT 1001 and ACCT 1002.	*February*
ACCT 1004(2) Management Accounting Concepts	6	N) Terminating unit. Cannot be counted with ACCT1001 and ACCT1002.	*July*
BIOL 1001 Concepts in Biology	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1901.	*February, January (short)*

Bachelor of Agricultural Economics - continued

Unit of study		Credit pointsi	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
BIOL 1002	Living Systems	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1902.	*July*
CROP 1001	Agricultural Science 1A	6	A) HSC 2 unit Chemistry or 3 unit Science. N) HORT1001, LWSC1001.	*February*
CROP 1002	Agricultural Science 1B	6	C) CROP1001. N) HORT1002, LWSC1002.	*July*
CLAW 1001	Commercial Transactions A	6		*February, July*
CLAW 1002	Commercial Transactions B	6	P) CLAW1001.	*July*
GEOG 1001	Biophysical Environments	6		*February*
GEOG 1002	Human Environments	6		*July, January (short)*
First year Government (GOVT)				
MATH 1011	Life Sciences Calculus	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1901 or 1001. May not be counted by students enrolled in the BSc/BCom combined award course.	*February*
MATH 1012	Life Sciences Algebra	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1002 or 1902. May not be counted by students enrolled in the BSc/BCom combined award course.	*July*
MATH 1013	Differential and Difference Equations	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1003 or 1903. May not be counted by students enrolled in the BSc/BCom combined award course.	*July*
MATH 1015	Life Science Statistics	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1905 or 1005. May not be counted by students enrolled in the BSc/BCom combined award course.	*February, January (short)*
Modern Language (level 1) units with the approval of the Dean of Agriculture.				

(1) ACCT1001 and ACCT1003 are mutually exclusive.
(2) ACCT1002 and ACCT1004 are mutually exclusive.

Students may count no more than 24 credit points of the following units of study towards the degree: First year units in Accounting, Agricultural Science, Biology, Commercial Law, Geography, Government, Mathematics (Life Sciences) and Modern Language. Students may not count both Accounting IA and IB, and Financial Accounting Concepts and Management Accounting Concepts towards their degree.

■ Table 2

AGEC 4008	Quantitative Planning Methods 4	4	P) AGEC2003. C) AGEC3001 or AGEC3031.	*February*
AGEC 4009	Agricultural Finance & Risk Management 4	4	P) AGEC 2003. C) AGEC3001 or AGEC3031.	*February*
AGRO 3001	Agronomy 3	8	P) AGRO2002 or CROP 1001 orHORTlOOl orLWSClOOl.	*February*
AGRO 2002	Crop and Pasture Agronomy	6		*July*

Bachelor of Agricultural Economics - continued

Unit of study		Credit pointsi	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
ANSC 2003	Animal Science 2 for Agr Economics	4		*July*
ASNS 2601	AsianStudies1 A	4		*February*
ASNS 2602	AsianStudies1 B	4	P) ASNS 2601.	*July*
ASNS 2603	Asian Studies 2A	4	P) ASNS2602.	*February*
ASNS 2604	Asian Studies 2B	4	P) ASNS2603.	*July*
ASNS 3601	Asian Studies 3A (Japanese)	4	P) ASNS 2604.	*February*
ASNS 3602	Asian Studies 3B (Japanese)	4	P) ASNS3601.	*July*
ECMT 2010	Regression Modelling	8	P) ECMT1010 and ECMT 1020.	*February*
ECMT 2021	Analysis of Discrete Choice Data	8	P) ECMT2010.	*July*
HORT 3001	Horticultural Science 3	8	P) CROP2001 or HORT2001 or AGRO2002.	*February*

Any level 2 semester units of study in:
Economic History (ECHS)
Government (GOVT)

Any level 2 or 3 semester units of study in:
Accounting (ACCT)
Commercial Law (CLAW)
Finance (FINC)
Geography (GEOG)
Marketing (MKTG)
Modern Language (with approval of the Dean)

Any level 3 semester units of study in:
Econometrics (ECMT)
Economics (ECON)
Units of study from the BScAgr or BHortSc degree, subject to the approval of the Head of Department of Agricultural Economics and the Head of the Department concerned.

Bachelor of Horticultural Science

Unit of study		Credit points	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered

The degree of Bachelor of Horticultural Science is available for those wishing to specialise in the field of horticultural science. Regulations governing candidature for the BHortSc degree are set out in Resolutions (See Section 8). The degree requires a minimum time of four years. The courses prescribed are summarised below.

■ First Year (commenced in 1995, revised in 1997)

ENTO 1001	Agricultural Entomology 1	4		*July*
HORT 1001	Horticultural Science 1A	6	A) HSC 2 unit Chemistry or 3 unit Science. N)CROP1001,LWSC1001.	*February*
HORT 1002	Horticultural Science 1B	6	C) HORT1001. N) CROP1002, LWSC1002.	*July*
BIOL 1201	Biology - Agricultural Concepts	4	A) HSC 2 unit Biology.	*February*
BIOL 1202	Biology - Agricultural Systems	5	A) BIOL 1201 or HSC 2 unitBiology.	*July*
BIOM 1001	Biometry 1	5	A) HSC 2 unit Mathematics.	*February*
AGEC 1003	Economic Environment of AustAgric 1A	3	A) HSC 2 unit Mathematics.	*February*
AGEC 1004	Economic Environment of AustAgric 1B	3	A) HSC 2 unit Mathematics. C) AGEC1003.	*July*
CHEM 1001	Fundamentals of Chemistry 1A	6	A) There is no assumed knowledge of chemistry for this unit of study, but students who have not undertaken an HSC chemistry course are strongly advised to complete a preliminary chemistry course before lectures commence. N) May not be counted with CHEM 1101 or 1901 or 1903.	*February*
CHEM 1002	Fundamentals of Chemistry IB	6	P) CHEM 1001 or equivalent. N) May not be counted with CHEM 1102 or 1902 or 1904.	*July*
or				
CHEM 1901	Chemistry 1A (Advanced)	6	P) UAI of at least 92.5 and at least 75% in HSC 2-unit Chemistry or equivalent; by invitation. C) Recommended concurrent unit of study: Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. N) May not be counted with CHEM 1001 or 1101 or 1903.	*February*
CHEM 1902	Chemistry IB (Advanced)	6	Q) CHEM 1901 or 1903 or Distinction in CHEM 1101 or equivalent; by invitation. C) Recommended concurrent unit of study: Preferred - MATH 1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904, otherwise - MATH 1013 and 1015 or 1004 and 1005. N) May not be counted with CHEM 1002 or 1102 or 1904.	*July*

■ Second Year

AGCH 2002	Agricultural Chemistry 2	8	P) CHEM1001 and CHEM1002 or CHEM1901 and CHEM1902 or First Year Chemistry.	*February*
GENE 2001	Agricultural Genetics 2	6	P) BIOL1201 and BIOL1202 or BIOL1001 and BIOL1002, BIOM1001.	*July*
MICR 2101	Agricultural Microbiology 2	6	P) First year Biology, First year Chemistry or Chemistry 1 Advanced.	*February*
HORT 2001	Horticultural Science 2	6	P) HORT1001 & HORT1002 orCROPlOOl andCROP1002 otLWSClOOl and LWSC1002. C) CROP2001.	*July*
BIOM 2001	Biometry 2	6	P) BIOM1001 or BIOM1002.	*July*

Bachelor of Horticultural Science - continued

Unit of study		Credit points	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
CROP 2002	Crop Protection 2	4	P) CROP1001 and CROP1002, orHORTlOOl andHORT1002, orLWSClOOl and LWSC1002 and BIOL1001 and BIOL1002 orl003, or BIOL1201 and 1202. C) MICR2101.	*February*
CROP 2001	Crop Science 2	6	P) CROP1001 andCROP1002, orHORTlOOl andHORT1002, orLWSClOOl and LWSC1002 andBIOM1001orBIOM1002. C) AGCH2002.	*July*
SOIL 2003	Soil Science 2	6		*February*
■ **Third Year (the normal load is 48 credit points)**				
AGEC 3001	Agribusiness Management 3	8	P) AGEC2003 or Economic Environment of Australian Agriculture or (AGEC 1003 and AGEC1004).	*February*
AGCH 3017	Food Chemistry and Biochemistry A	4	P) AGCH2001 or AGCH2002 or BCHM (2002 or 2902) or BMED (2501 and 2502 and 2504). N) May not be counted with AGCH 3003 or 3005.	*February*
AGCH 3018	Food Chemistry and Biochemistry B	4	C) AGCH 3017. N) May not be counted with AGCH 3003 or 3005.	*February*
AGRO 3001	Agronomy 3	8	P) AGRO2002 or CROP 1001 orHORTlOOl orLWSClOOl.	*February*
BIOM 3002	Experimental Design 3	4	P) BIOM2001 orBIOM2002. N)BIOM3001.	*February*
BIOM 3003	Statistical Modelling 3	4	P) BIOM2001 orBIOM2002. N)BIOM3001.	*February*
AGEC 2001	Commodity Price Analysis 2	8	P) Agricultural Economics I or AGEC 1002 or Economic Environment of Australian Agriculture or (AGEC 1003 and AGEC 1004) or ECON1001.	*February*
HORT 3001	Horticultural Science 3	8	P) CROP2001 or HORT2001 or AGRO2002.	*February*
HORT 3003	Postharvest Biology and Technology 3	4	P) CROP 2001 or HORT 2001 or AGRO 2002.	*February*
AGCH 3012	Rural Environmental Chemistry	4	P) AGCH2002 or ENVI 2001 and 2002. C) ENVI 3001. *NB: This unit is offered to students enrolled in BSc(Environmental), BLWSc and, subject to numbers, may be available to BScAgr. A maximum quota of 30 may exist. Contact Professor Kennedy.*	*February*
AGCH 3016	Agricultural Biotechnology 3	4	A) AGCH2002, GENE2001, MICR2101, ANSC2002 and CROP2001, or the equivalent of these units.	*July*
CROP 3002	Agricultural Systems & Irrigation Sci 3	8	N) HORT2001and CROP3003.	*July*
AGEC 4004	Applied Marketing	8	P) AGEC2001 or (AGEC 1003 & AGEC 1004) or Economic Environment of Australian Agriculture or Economics II or ECON2001 or ECON2901.	*July*
AGCH 3020	Chemistry & Biochemistry of Ecosystems A	4	P) AGCH2001 or AGCH2002 or CHEM (2001 or 2101 or 2202 or 2301 or 2302 or 2902) or BCHM (2002 or 2902) or ENVI (2001 or 2002). N) May not be counted with AGCH 3001 or 3004.	*July*
AGCH 3021	Chemistry & Biochemistry of Ecosystems B	4	C) AGCH3020. N) May not be counted with AGCH 3001 or 3004.	*July*
HORT 3002	Flower and Nursery Crops 3	4	P) CROP 2001 or HORT 2001 or AGRO 2002.	*July*
PPAT 3002	Plant Disease 3	4	P) CROP2001, CROP2002, GENE2001.	*July*

Bachelor of Horticultural Science - continued

Unit of study		Credit points	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
AGEC 2003	Production Economics 2	8	P) Agricultural Economics 1 or AGEC1001 orAGEC1031 orECON2001 or Economics II or Economic Environment of Australian Agriculture or (AGEC 1003 and AGEC 1004).	*July*
SOIL 3003	Soil Science 3	8	P) SOIL2003.	*July*
■ Fourth Year				
HORT 4001	Horticultural Science 4A	24	P) HORT3001.	*February*
HORT 4002	Horticultural Science 4B	24	P) HORT3001.	*July*

Bachelor of Land and Water Science

Unit of study	Credit points	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered

Regulations governing candidature for the BLWSc degree are set out in the Resolutions (see Section 8). The degree requires a minimum of four years. The units prescribed are summarised below.

■ First Year (Commenced in 2000)

BIOM 1002	Environmetrics 1	6	A) 2 unit Mathematics.	*July*
BIOL 1001	Concepts in Biology	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1901.	*February, January (short)*
ENVI 1001	Global Geology	6		*February*
ENVI 1002	Geomorphic Environments and change	6		*July*
LWSC 1001	Land and Water Science 1A	6	N) CROP1001 andHORTlOOl.	*February*
LWSC 1002	Land and Water S c i e n c e 1B	6	C) (LWSC1001) Land and Water Science 1A. N) CROP1002 and HORT1002.	*July*

and 12 credit points from First year Chemistry

CHEM 1001	Fundamentals of Chemistry 1A	6	A) There is no assumed knowledge of chemistry for this unit of study, but students who have not undertaken an HSC chemistry course are strongly advised to complete a preliminary chemistry course before lectures commence. N) May not be counted with CHEM 1101 or 1901 or 1903.	*February*
CHEM 1002	Fundamentals of Chemistry 1B	6	P) CHEM 1001 or equivalent. N) May not be counted with CHEM 1102 or 1902 or 1904.	*July*

or from standard level CHEM 1101 Chemistry 1A and 1102 Chemistry IB
or from advanced level CHEM 1901 Chem 1A (Adv) and CHEM 1902 Chem IB (Adv)

■ Second Year

BIOM 2002	Environmetrics 2	4	P) BIOM1002 or BIOM1001.	*July*
AGCH 2002	Agricultural Chemistry 2	8	P) CHEM1001 and CHEM1002 or CHEM1901 and CHEM1902 or First Year Chemistry.	*February*
BIOL 2004	Plant Ecology and Diversity	8	Q) BIOL 1001 or 1901 and one of either BIOL 1002, 1902, 1003, 1903 or LWSC 1002. C) MBLG 2001 or 2101 (or MICR 2013 for BLWSc). N) May not be counted with BIOL 2904. *NB: The content of Biology 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2006 or 2906 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.*	*February*
BIOL 2101	Animals A - Theory	4	QJBIOL 1001 or 1901 and one of either BIOL 1002, 1902, 1003, 1903 or LWSC 1002. N) May not be counted with BIOL 2001 or 2901. *NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Not a prerequisite for Senior units of study in Biology. Students taking this unit concurrently with (or following completion of) BIOL 2004 or 2904 or 2006 or 2906 must complete 16 hours of alternative work in one unit, in place of the core material common to both units. Students taking BIOL 2101 concurrently with (or following completion of) BIOL 2106 must complete 16 hours of alternative work in place of the core material common to both units, and if taking these units concurrently, must elect at enrolment in which unit they wish to do the alternative work.*	*February*

Bachelor of Land and Water Science - continued

Unit of study		Credit points	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
BIOL 2102	Animals B - Theory	4	Q) BIOL 1001 or 1901 and one of either BIOL 1002, 1902, 1003, 1903 or LWSC 1002. N) May not be counted with BIOL 2002 or 2902. *NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Not a prerequisite for Senior units of study in Biology.*	*July*
GEOG 2302	Fluvial Geomorphology	6	P) GEOG 2001 or 36 credit points of Junior units of study including GEOG 1001 or ENVI 1001 or 1002 or GEOG 2001. Students in the Bachelor of Resource Economics should have 36 credit points of Junior units of study in Biology, Chemistry and Mathematics. N) May not be counted with GEOG 2002.	*July*
LWSC 2001	Land and Water Science 2	4	A) LWSClOOland LWSC1002 or CROP1001 and CROP1002 or HORTlOOland HORT1002, ENVI1001, ENVI1002, BIOL2004, SOIL2003.	*July*
MICR 2013	Introductory Microbiology 2	4	P) BIOL1001 or BIOL1201, LWSC1002 or CROP1002 or HORT1002, 12 credit points of First Year Chemistry. N) MICR2003, MICR2001.	*February*
SOIL 2003	Soil Science 2	6		*February*

■ Third Year (48 credit points)

AGCH 3012	Rural Environmental Chemistry	4	P) AGCH2002 or ENVI 2001 and 2002. C) ENVI 3001. *NB: This unit is offered to students enrolled in BSc(Environmental), BLWSc and, subject to numbers, may be available to BScAgr. A maximum quota of 30 may exist. Contact Professor Kennedy.*	*February*
AGCH 3020	Chemistry & Biochemistry of Ecosystems A	4	P) AGCH2001 or AGCH2002 or CHEM (2001 or 2101 or 2202 or 2301 or 2302 or 2902) or BCHM (2002 or 2902) or ENVI (2001 or 2002). N) May not be counted with AGCH 3001 or 3004.	*July*
AGRO 3001	Agronomy 3	8	P) AGRO2002 orCROPlOOl orHORTlOOl orLWSClOOl.	*February*
ENVI 3004	Environmental Impact Assessment	4	P) Entry by permission of Course Coordinator only. N) May not be counted with ENVI 3002. *NB: Available for Study Abroad students only.*	*July*
LWSC 3001	Hydrology and Catchment Management		*This 4 credit point unit of study is planned for 2002.*	
RSIS 3001	Rural Spatial Information Systems 3	4	P) SOIL 2003, BIOM2001 orBIOM2002.	*February*
SOIL 3003	Soil Science 3	8	P) SOIL2003.	*July*

And 12 credit points of electives chosen with the approval of the course coordinator from ecology, land science, water science, biophysical modelling, socioeconomics or political systems.

■ Fourth Year (48 credit points)

AGEC 4027	Introductory Land and Water Economics *4%*	4	*NB: Not offered in 2001.*	*February*
ENVI 3003	Law and the Environment	4	P) Entry by permission of Course Coordinator only. N) May not be counted with ENVI 3001. *NB: Available for Study Abroad students only.*	*February*
LWSC 4001	Planning and Communicating Policy		*This 4 credit point unit of study is planned for 2003.*	
LWSC 4002	Project/Case Study		*This 24 credit point unit of study is planned for 2003.*	

And 12 credit points of electives chosen with the approval of the course coordinator from ecology, land science, water science, biophysical modelling, socioeconomics or political systems.

Bachelor of Resource Economics

Unit of study	Credit points	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered

Regulations governing candidature for the BResEc degree are set out in the Resolutions (see Section 8). The degree requires a minimum of four years. The units prescribed are summarised below.

■ First Year (48 credit points; commenced in 2000)

AGEC 1031	Resource Economics 1	6	A) HSC 3 unit Mathematics. C) ECON1001.	*July*
ECON 1001	Introductory Microeconomics	6	A) HSC 2 unit Mathematics.	*February, January (short)*
and 12 credit points from standard biology or land and water science.				
BIOL 1001	Concepts in Biology	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1901.	*February, January (short)*
and				
BIOL 1002	Living Systems	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1902.	*July*
or from advanced level BIOL1901 and 1902; or				
LWSC 1001	Land and Water Science 1A	6	N) CROP1001 and HORT1001.	*February*
LWSC 1002	Land and Water Science 1B	6	C) (LWSC1001) Land and Water Science 1A. N) CROP1002 and HORT1002.	*July*
and 12 credit points from First year Chemistry				
CHEM 1001	Fundamentals of Chemistry 1A	6	A) There is no assumed knowledge of chemistry for this unit of study, but students who have not undertaken an HSC chemistry course are strongly advised to . complete a preliminary chemistry course before lectures commence. N) May not be counted with CHEM 1101 or 1901 or 1903.	*February*
CHEM 1002	Fundamentals of Chemistry 1B	6	P) CHEM 1001 or equivalent. N) May not be counted with CHEM 1102 or 1902 or 1904.	*July*
or from standard level CHEM 1101 Chemistry 1A and 1102 Chemistry IB; or from advanced level CHEM 1901 Chem 1A (Adv)and CHEM 1902 Chem IB (Adv); and 12 credit points from standard level mathematics.				
MATH 1001	Differential Calculus	3	A) HSC 3-unit Mathematics. N) May not be counted with MATH 1901 or 1011.	*February, January (short)*
MATH 1002	Linear Algebra	3	A) HSC 3-unit Mathematics. N) May not be counted with MATH 1902 or 1012.	*February, January (short)*
MATH 1003	Integral Calculus and Modelling	3	A) HSC 4-unit Mathematics or MATH 1001. N) May not be counted with MATH 1903 or 1013.	*July, January (short)*
MATH 1005	Statistics	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1905 or 1015.	*July, January (short)*
or from advanced level MATH1901 and 1902 and 1903 and 1905.				

■ Second Year (48 credit points)

AGEC 2001	Commodity Price Analysis 2	8	P) Agricultural Economics I or AGEC 1002 or Economic Environment of Australian Agriculture or (AGEC1003 and AGEC1004) or ECON1001.	*February*

Bachelor of Resource Economics - continued

Unit of study		Credit points	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
AGEC 2003	Production Economics 2	8	P) Agricultural Economics 1 or AGEC1001 orAGEC1031 orECON2001 or Economics II or Economic Environment of Australian Agriculture or (AGEC1003 and AGEC1004).	*July*
AGEC 2005	Applied Commodity Modelling 2	4	P) Econometrics I or (ECMT1010 and ECMT 1020) or (MATH 1001 and 1002 and 1003 and 1005). N) AGEC2006 and AGEC2007.	*February*
ECON 1002	Introductory Macroeconomics	6	A) HSC 2 unit Mathematics.	*July, January (short)*
ECON 2001	Intermediate Microeconomics	8	P) ECON1001. C) ECMT1010. *NB: Certain combinations of Maths/Stats may substitute for Econometrics - consult Faculty.*	*February, January (short)*
GEOG 2001	Processes in Geomorphology	8	P) 36 credit points of Junior units of study, including GEOG 1001 or ENVI 1001 or 1002. Students enrolled in the Bachelor of Resource Economics should have 36 credit points from Junior units of study in Biology, Chemistry and Mathematics. *NB: A candidate who has completed 36 Junior credit points including 12 Junior credit points of Mathematics and 12 Junior credit points of Physics or Chemistry and who has not taken Geography 1001 or 1002 may apply to the department for permission to enrol in any Intermediate Geography unit of study. The Department of Geography is not normally prepared to support such applications to enrol in Intermediate Geography units of study from persons other than those who, in their first year of studies, have completed six Junior units of study above the concessional pass grade and have not subsequently failed in any Intermediate unit of study.*	*February*
GEOG 2302	Fluvial Geomorphology	6	P) GEOG 2001 or 36 credit points of Junior units of study including GEOG 1001 or ENVI 1001 or 1002 or GEOG 2001. Students in the Bachelor of Resource Economics should have 36 credit points of Junior units of study in Biology, Chemistry and Mathematics. N) May not be counted with GEOG 2002.	*July*
or				
GEOG 2002	Fluvial and Coastal Geography	8	P) 36 credit points of Junior units of study, including GEOG 1001 or ENVI 1001 or 1002. Students enrolled in the Bachelor of Resource Economics should have 36 credit points from Junior units of study in Biology, Chemistry and Mathematics. N) May not be counted with GEOG 2302 or MARS 2002. *NB: Other Information: As for GEOG 2001.*	*July .*
■ Third Year (48 credit points)				
AGEC 3002	Agricultural and Resource Policy	8	P) (AGEC2001 & AGEC2003)orECON2001 orECON2901 or Economics II.	*July*
AGEC 3031	Resource Economics 3‡	8	P) AGEC2003. *NB: Not offered in 2001.*	*February*
ECON 2002	Intermediate Macroeconomics	8	P) ECON1002. C) ECMT1020. *NB: Certain combinations of Maths/Stats may substitute for Econometrics - consult Faculty.*	*July, January (short)*
ECON 3000 level (option); together with 16 credit points chosen from Table 1 below.				
■ Fourth Year (48 credit points)				
AGEC 4031	Resource Economics Project 4‡	12	C) Any 32 credit points from AGEC4000 level. *NB: Not offered in 2001.*	*Full Year (starts Feb)*
AGEC 4041	Research Methods 4‡	4	P) AGEC2003 and AGEC2005. *NB: Not offered in 2001.*	*February*
ENVI 4803	Environmental Law‡	4		*February*

Bachelor of Resource Economics - continued

Unit of study	Credit points	A) Assumed Knowledge C) Corequisite	Q) Qualifying N) Prohibition	P) Prerequisite	Offered

ECON 3000 level (option); together with at least 12 credit points chosen from Table 3 below, and additional unit(s) if necessary, chosen from Table 2 below.

Elective units of study in the BResEc degree

■ Table 1: Electives for Third Year students

Units in the following discipline areas (Level 2 unless otherwise specified):
- agricultural economics (Level 3)
- agricultural chemistry
- animal science
- biology
- chemistry
- crop sciences
- economics (Level 2 or 3)
- environmental science
- geography (Level 2 or 3)
- geology
- land and water science
- mathematics
- marine science
- resource economics (Level 3)
- soil science.

■ Table 2: Electives for Fourth Year students

Units in the following discipline areas (Level 2 or 3 unless otherwise specified):
- agricultural economics (Level 3 OR 4)
- agricultural chemistry
- animal science
- biology
- chemistry
- crop sciences
- economics
- environmental science
- geography
- geology
- land and water science
- mathematics
- marine science
- resource economics (Level 3 or 4)
- soil science.

■ Table 3: Resource Economics electives for Fourth Year students

AGEC 4032	Methods of Non-Market Valuation 4	*This 4 credit point unit of study is planned for 2003.*
AGEC 4033	Minerals and Energy Economics 4	*This 4 credit point unit of study is planned for 2003.*
AGEC 4034	Renewable Resource Economics	*This 4 credit point unit of study is planned for 2003.*
AGEC	Environmental Economics 4	*This 4 credit point unit of study is planned for 2003.*
AGEC	Water Economics 4	*This 4 credit point unit of study is planned for 2003.*

Bachelor of Science in Agriculture

Unit of study	Credit points	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered

The degree of Bachelor of Science in Agriculture is available for those wishing to cover the whole field of agricultural science. Regulations governing candidature for the BScAgr degree are set out in resolutions (See Section 8). The degree requires a minimum time of four years. The units prescribed are summarised below.

■ First Year (commenced in 1995, revised in 1997)

ENTO 1001	Agricultural Entomology 1	4		*July*
CROP 1001	Agricultural Science 1A	6	A) HSC 2 unit Chemistry or 3 unit Science. N) HORT1001, LWSC1001.	*February*
CROP 1002	Agricultural Science 1B	6	C) CROP1001. N) HORT1002, LWSC1002.	*July*
BIOL 1201	Biology - Agricultural Concepts	4	A) HSC 2 unit Biology.	*February*
BIOL 1202	Biology - Agricultural Systems	5	A) BIOL 1201 or HSC 2 unitBiology.	*July*
BIOM 1001	Biometry 1	5	A) HSC 2 unit Mathematics.	*February*
AGEC 1003	Economic Environment of AustAgric 1A	3	A) HSC 2 unit Mathematics.	*February*
AGEC 1004	Economic Environment of Aust Agric IB	3	A) HSC 2 unit Mathematics. C) AGEC1003.	*July*
CHEM 1001	Fundamentals of Chemistry 1A	6	A) There is no assumed knowledge of chemistry for this unit of study, but students who have not undertaken an HSC chemistry course are strongly advised to complete a preliminary chemistry course before lectures commence. N) May not be counted with CHEM 1101 or 1901 or 1903.	*February*
CHEM 1002	Fundamentals of Chemistry IB	6	P) CHEM 1001 or equivalent. N) May not be counted with CHEM 1102 or 1902 or 1904.	*July*
or				
CHEM 1901	Chemistry 1A (Advanced)	6	P) UAI of at least 92.5 and at least 75% in HSC 2-unit Chemistry or equivalent; by invitation. C) Recommended concurrent unit of study: Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. N) May not be counted with CHEM 1001 or 1101 or 1903.	*February*
CHEM 1902	Chemistry IB (Advanced)	6	Q) CHEM 1901 or 1903 or Distinction in CHEM 1101 or equivalent; by invitation. C) Recommended concurrent unit of study: Preferred - MATH 1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904, otherwise - MATH 1013 andI 1015 or 1004 and 1005. N) May not be counted with CHEM 1002 or 1102 or 1904.	*July*

■ Second Year

AGCH 2002	Agricultural Chemistry 2	8	P) CHEM1001 and CHEM1002 or CHEM1901 and CHEM1902 or First Year Chemistry.	*February*
GENE 2001	Agricultural Genetics 2	6	P) BIOL1201 andBIOL1202orBIOL1001 andBIOL1002, BIOM1001.	*July*
MICR 2101	Agricultural Microbiology 2	6	P) First year Biology, First year Chemistry or Chemistry 1 Advanced.	*February*
ANSC 2002	Animal Science 2	6	P) CROP1001 and CROP1002 or HORT1001 and HORT1002 or LWSClOOland LWSC1002. C) AGCH2002.	*July*
BIOM 2001	Biometry 2	6	P) BIOM1001 orBIOM1002.	*July*

Bachelor of Science in Agriculture - continued

Unit of study		Credit points	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
CROP 2002	Crop Protection 2	4	P) CROP1001 andCROP1002, orHORTlOOl andHORT1002, orLWSClOOl and LWSC1002 and BIOL1001 and BIOL1002 orl003, or BIOL1201 and 1202. C) MICR2101.	*February*
CROP 2001	Crop Science 2	6	P) CROP1001 and CROP1002, orHORTlOOl andHORT1002, orLWSClOOl and LWSC1002 and BIOMlOOlor BIOM1002. C) AGCH2002.	*July*
SOIL 2003	Soil Science 2	6		*February*
■ Third Year (the normal load is 48 credit points)				
AGEC 2001	Commodity Price Analysis 2	8	P) Agricultural Economics I or AGEC 1002 or Economic Environment of Australian Agriculture or (AGEC1003 and AGEC1004) or ECON1001.	*February*
AGEC 2003	Production Economics 2	8	P) Agricultural Economics 1 or AGEC1001 or AGEC1031 orECON2001 or Economics II or Economic Environment of Australian Agriculture or (AGEC1003 and AGEC1004).	*July*
AGEC 3001	Agribusiness Management 3	8	P) AGEC2003 or Economic Environment of Australian Agriculture or (AGEC 1003 and AGEC1004).	*February*
AGEC 4004	Applied Marketing	8	P) AGEC2001 or (AGEC1003 & AGEC1004) or Economic Environment of Australian Agriculture or Economics II or ECON2001 or ECON2901.	*July*
AGCH 3016	Agricultural Biotechnology 3	4	A) AGCH2002, GENE2001, MICR2101, ANSC2002 and CROP2001, or the equivalent of these units.	*July*
AGCH 3020	Chemistry & Biochemistry of Ecosystems A	4	P) AGCH2001 or AGCH2002 or CHEM (2001 or 2101 or 2202 or 2301 or 2302 or 2902) or BCHM (2002 or 2902) or ENVI (2001 or 2002). N) May not be counted with AGCH 3001 or 3004.	*July*
AGCH 3021	Chemistry & Biochemistry of Ecosystems B	4	C) AGCH3020. N) May not be counted with AGCH 3001 or 3004.	*July*
AGCH 3017	Food Chemistry and Biochemistry A	4	P) AGCH2001 or AGCH2002 or BCHM (2002 or 2902) or BMED (2501 and 2502 and 2504). N) May not be counted with AGCH 3003 or 3005.	*February*
AGCH 3018	Food Chemistry and Biochemistry B	4	C) AGCH 3017. N) May not be counted with AGCH 3003 or 3005.	*February*
AGCH 3012	Rural Environmental Chemistry	4	P) AGCH2002 or ENVI 2001 and 2002. C) ENVI 3001. *NB: This unit is offered to students enrolled in BSc(Environmental), BLWSc and, subject to numbers, may be available to BScAgr. A maximum quota of 30 may exist. Contact Professor Kennedy.*	*February*
MICR 3102	Agricultural Microbiology 3	8	P) MICR2101.	*July*
CROP 3002([1])	Agricultural Systems & Irrigation Sci 3	8	N) HORT2001and CROP3003.	*July*
CROP 3003([1])	Agricultural Systems for Hort Science 3	4	N) CROP3002.	*July*
AGRO 3001	Agronomy 3	8	P) AGRO2002 orCROPlOOl orHORTlOOl orLWSClOOl.	*February*
ANSC 3001	Animal Nutrition 3	8	P) ANSC2002.	*February*
ANSC 3002	Animal Reproduction 3	8	P) ANSC2002.	*July*

Bachelor of Science in Agriculture - continued

Unit of study		Credit points	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
ANSC 3003	Animal Structure and Function 3A	8	P) ANSC2002.	*February*
ANSC 3004	Animal Structure and Function 3B	8	P) ANSC2002.	*July*
ANSC 3005	Animal Biotechnology 3	4	P) Students are expected to have knowledge of Genetics equivalent at least to Agricultural Genetics 2 (GENE2001) and knowledge of Animal Science equivalent to Animal Science 2 (ANSC2002). C) Agricultural Biotechnology (AGCH3016).	*July*
BIOM 3002	Experimental Design 3	4	P) BIOM2001 or BIOM2002. N)BIOM3001.	*February*
BIOM 3003	Statistical Modelling 3	4	P) BIOM2001 orBIOM2002. N)BIOM3001.	*February*
HORT 3001	Horticultural Science 3	8	P) CROP2001 orHORT2001 or AGRO2002.	*February*
HORT 3002	Flower and Nursery Crops 3	4	P) CROP 2001 or HORT 2001 or AGRO 2002.	*July*
HORT 3003	Postharvest Biology and Technology 3	4	P) CROP 2001 or HORT 2001 or AGRO 2002.	*February*
PPAT 3002	Plant Disease 3	4	P) CROP2001,CROP2002,GENE2001.	*July*
RSIS 3001	Rural Spatial Information Systems 3	4	P) SOIL 2003, BIOM2001 or BIOM2002.	*February*
SOIL 3003	Soil Science 3	8	P) SOIL2003.	*July*

(l)mutually exclusive

■ Fourth Year (48 credit points)

AGEC 4022	Agribusiness 4A	24	P) AGEC3001, 24 credit points of 3rd year Agr Sc. C) AGEC4023.	*February*
AGEC 4023	Agribusiness 4B	24	P) AGEC3001, 24 credit points of 3rd year Agr Sc. C) AGEC4022.	*July*
AGCH 4002	Agricultural Chemistry 4A	24	P) AGCH3004 or AGCH3005 or AGCH3020 and AGCH3021 or AGCH3017and AGCH3018.	*February*
AGCH 4003	Agricultural Chemistry 4B	24	C) AGCH4002.	*July*
AGEC 4020	Agricultural Economics 4A	24	P) AGEC2001, AGEC2003. C) AGEC4021 Agricultural Economics 4B.	*February*
AGEC 4021	Agricultural Economics 4B	24	P) AGEC2001,AGEC2003. C) AGEC4020.	*July*
ENTO 4001	Agricultural Entomology 4A	24	P) ENTO 1001. C) ENTO4002.	*February*
ENTO 4002	Agricultural Entomology 4B	24	P) ENTO1001. C) ENTO4001.	*July*
GENE 4001	Agricultural Genetics 4A	24	P) BIOM2001, GENE2001.	*February*

Bachelor of Science in Agriculture - continued

Unit of study	Credit points;	A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
GENE 4002 Agricultural Genetics 4B	24	P) BIOM2001, GENE2001. C) GENE4001.	*July*
MICR 4101 Agricultural Microbiology 4A	24	P) MICR3102. C) MICR4102.	*February*
MICR 4102 Agricultural Microbiology 4B	24	P) MICR3102. C) MICR4101.	*July*
AGRO 4001 Agronomy 4A	24	P) AGRO3001.	*February*
AGRO 4002 Agronomy 4B	24	P) AGRO3001. C) AGRO4001.	*July*
ANSC 4001 Animal Production 4A	24	P) ANSC3001,ANSC3002,ANSC3003.	*February*
ANSC 4002 Animal Production 4B	24	P) ANSC3001,ANSC3002,ANSC3003. C) ANSC4001.	*July*
BIOM 4001 Biometry 4A	24	P) BIOM3001or BIOM3002 and BIOM3003.	*February*
BIOM 4002 Biometry 4B	24	C) BIOM4001.	*July*
AGCH 4004 Cereal Science 4A	24	P) AGCH3005.	*February*
AGCH 4005 Cereal Science 4B	24	C) AGCH4004.	*July*
FARM 4001 Farming Systems 4A‡	24	P) AGEC2003 or AGEC3001. C) AGRO3001.	*February (not in 2001)*
FARM 4002 Farming Systems 4B‡	24	P) AGEC2003 or AGEC3001. C) FARM4001, AGRO3001.	*July (not in 2001)*
HORT 4001 Horticultural Science 4A	24	P) HORT3001.	*February*
HORT 4002 Horticultural Science 4B	24	P) HORT3001.	*July*
PPAT 4001 Plant Pathology 4A	24	P) PPAT3002.	*February*
PPAT 4002 Plant Pathology 4B	24	P) PPAT3002.	*July*
AGEC 4024 Resource Economics 4A	24	P) AGEC2001, AGEC2003 and 24 credit points of 3rd year Agr Sc. C) AGEC4025.	*February*
AGEC 4025 Resource Economics 4B	24	P) AGEC2001, AGEC2003 and 24 credit points of 3rd year Agr Sc. C) AGEC4024.	*July*
SOIL 4002 Soil Science 4A	24	P) SOIL 3003.	*February*
SOIL 4003 Soil Science 4B	24	C) SOIL4002.	*July*
AGRF 4001 Special Program 4A	24		*February*
AGRF 4002 Special Program 4B	24		*July*

CHAPTER 3

Undergraduate units of study

Bachelor of Agricultural Economics

Bachelor of Horticultural Science

Bachelor of Land and Water Science

Bachelor of Resource Economics

Bachelor of Science in Agriculture

Accounting in the Bachelor of Agricultural Economics

In addition to the units of study listed after this entry, the Department of Accounting in the Faculty of Economics and Business offers the following level 3000 units. Refer to the Faculty of Economics and Business Handbook for unit descriptions.

- ACCT 3003 Financial Statement Analysis
- ACCT 3004 Auditing.

ACCT 1001 **Accounting IA**
6 credit points
Ms Gordon
Offered: February, July. **Assumed knowledge:** 2 unit Maths. **Classes:** (2 lectures, 1 tutorial & 1 practical)/week. **Assessment:** One 3hr exam, 2 tests/sem, weekly assignments.
NB: Restricted entry (code 511500 or 521500 or 511503 or 521503 or Combined Commerce).
Introduces accounting and the double entry system of financial recording. Use is made of electronic computer spreadsheets to solve financial accounting problems. Examines assumptions underlying the preparation of financial statements for external users. Development of skills necessary to understand, discuss, analyse and write about accounting-related topics. Designed as an introduction to accounting. No prior knowledge of accounting assumed.

ACCT 1002 **Accounting IB**
6 credit points
Offered: February, July, January (short). **Prerequisite:** ACCT 1001. **Classes:** (2 lectures, 1 tutorial & 1 workshop)/week. **Assessment:** One 1hr mid semester test, one 3hr final exam, 1 computing test, 1 financial statement analysis assignment and weekly assignments.
NB: Restricted entry (code 511500 or 521500 or 511503 or 521503 or Combined Commerce).
Accounting is about the use of information to make economic decisions. Accounting IB (a) illustrates the problems in identifying and measuring economic information, (b) discusses solutions adopted by the accounting profession, and (c) develops students' ability to use the information to make decisions. It is obvious that accounting requires familiarity with technical rules and procedures. However, technical rules do not always provide clear guides; principles sometimes conflict. In these instances, it is necessary to use sound argument and judgement in devising a solution. The course material and assessment are designed to help students develop the necessary analytical, written and oral communication skills.

ACCT 1003 **Financial Accounting Concepts**
6 credit points
Ms Pickering
Offered: February. **Prohibition:** Terminating unit. Cannot be counted with ACCT 1001 and ACCT 1002. **Classes:** 2 lectures/ week. **Assessment:** One 3hr exam, mid-semester test.
NB: NB: Restricted entry (code 511503 or 521503 or 511501 or 521501).
Provides an introduction to the theory and practice of accounting. Designed primarily for students who are not majoring in accounting. The aim is to develop skills in preparing and analysing financial statements from a users' perspective. Topics include: the institutional arrangements in Australia and overseas, balance sheet equation, current assets (including inventory, accounts receivable), income measurement, financial statement preparation and analysis.

Note: Only available in the BEc, BEc(SocSc) and BAgrEc degrees and cannot be counted with Accounting IA and IB. If students have successfully completed Financial Accounting Concepts and Management Accounting Concepts and have gained a place in the Accounting quota code 500/503 by applying through UAC, they may be exempted from enrolling in Accounting IA and IB after having passed a cross-over examination. This examination will be available only to students who have gained a place in the code 500/503 quota.

ACCT 1004 **Management Accounting Concepts**
6 credit points
Mr.Blayney
Offered: July. **Prohibition:** Terminating unit. Cannot be counted with ACCT 1001 and ACCT 1002. **Classes:** (3 lectures - one 2hr lecture, one 1 hour lecture)/week. **Assessment:** One 3hr exam, a mid-semester test and 2 assignments.
NB: NB: Restricted entry (code 511503 or 521503 or 511501 or 521501).
The aim is to explain how accounting information is used by managers. Topics include: estimating cost functions, relevant costing, cost allocation and discounted cash flow analysis. Topical matters drawing on the "different costs for different purposes" theme highlight the problematic nature of cost and its implication, for example, of identifying the "cost" of making a local phone call when there are various companies in the phone service chain, or how to "cost" a university degree. As well, students are taught to interpret a management performance report and to recognise the interrelationships between performance evaluation and asset valuation.

Note: Only available in the BEc, BEc(SocSc) and BAgrEc degrees and cannot be counted with Accounting IA and IB. If students have successfully completed Financial Accounting Concepts and Management Accounting Concepts and have gained a place in the Accounting quota code 500/503 by applying through UAC, they may be exempted from enrolling in Accounting IA and IB after having passed a cross-over examination. This examination will be available only to students who have gained a place in the code 500/503 quota.

ACCT 2001 **Financial Accounting A**
8 credit points
Dr Arthur
Offered: July, January (short). Prerequisite: ACCT 1001 and ACCT 1002. Corequisite: ECMT1010 and ECMT 1020. Classes: (3 lectures & 1 tutorial)/week. Assessment: One 1000w essay. One 1.5 hr exam, one 3hr exam, weekly assignments.
Accounting and reporting practices of companies, particularly listed public companies. Emphasis is placed on developing an understanding of, and the ability to evaluate critically, the various regulatory requirements (professional and statutory) governing financial reporting. The economic significance of management's ability to choose between alternative techniques for recording/reporting a given transaction or event is also considered from within a 'costly contracting' framework. Issues covered include accounting for income taxes, leases, employee entitlements, intangibles, extractive industries. Consideration of off-balance sheet liabilities and owner's equity. Introduction to intercorporate investments.

ACCT 2002 Management Accounting A

8 credit points
Mr Blayney
Offered: February, January (short). **Prerequisite:** ACCT 1001 and ACCT 1002. **Corequisite:** ECMT1010 and ECMT1020. **Classes:** (2 lectures, 1 tutorial & 1 practical)/week. **Assessment:** One 3hr exam, weekly assignments.

This course provides students with an introduction to the basics of management/cost accounting. Areas specifically covered include: cost terms and purposes, cost behaviour, cost-volume-profit analysis, cost estimation via regression analysis and other means, basic and alternative product costing methods (including activity-based costing), detailed study of the mechanics of the budgeting process (master budgets, flexible budgets, standard costing and variance analysis), decision making of relevant costs/revenues and cost allocation.

ACCT 2003 Accounting and Business Info Systems

8 credit points
Mr. Edwards
Offered: July. Prerequisite: ACCT 1002. Classes: (2 lectures, 1 workshop/practical, 1 tutorial)/week. Assessment: Final examination, one test, assignments, groupwork.
This unit is designed to help you understand i) how accountants interact with the accounting systems of business and government as users, evaluators and designers, ii) how business processes impact on the appropriateness of the design of accounting systems. The unit is designed to provide you with a body of knowledge that includes: a broad awareness of the concepts of accounting and business processes - especially those pertaining to systems, information, managerial decision making, control, accounting models, and information technology; a familiarity with the basic business processes, such as inputs, outputs, processing procedures, the role of databases, and controls; a basic introduction to systems analysis and design techniques; and an understanding of the steps involved in comprehensive systems development, again with specific reference to the contribution that accountants - internal and external - can provide in modern computerised organisations. This unit incorporates practical work using a modern set of integrated accounting transaction processing and enterprise resource planning software.

ACCT 3001 Financial Accounting B

8 credit points
Dr Arthur
Offered: February. Prerequisite: ACCT 2001. Classes: (2 lectures, 1 tutorial & 1 workshop)/week. Assessment: One 2hr exam, one 3hr exam, one case study, weekly assignments.
Advanced topics in financial accounting, including accounting for a company's investments in corporations, joint ventures and associates, and accounting methods used by public sector entities. Specific accounting issues in relation to group accounting include foreign currency translation, equity accounting, segment reporting and related party transactions. This course attempts to develop students' understanding of valuation issues in accounting and to critically evaluate the valuation methods used in the private and public sectors. Recent developments in measurement and valuation are examined.

ACCT 3002 Management Accounting B

8 credit points
Ms. Pickering
Offered: July. **Prerequisite:** ACCT 2002. **Classes:** (2 lectures, 1 tutorial & 1 practical)/week. **Assessment:** Final examination, one test, assignments and groupwork.

This unit provides students with an analysis of basic managerial problems focusing on the role of the management accountant in today's changing manufacturing and business environment. Concentrating on organisational and behavioural issues it contrasts with the rather technical approach of Management Accounting A. Topics include: decentralisation and transfer pricing and motivation; behavioural consequences (motivation, etc.) of budgeting and control systems; recent developments such as Just-In-Time inventory management, total quality management, activity based costing and capital budgeting.

AGCH 2002 Agricultural Chemistry 2

8 credit points
Dr Caldwell, Dr Lees
Offered: February. **Prerequisite:** CHEM 1001 and CHEM 1002 or CHEM 1901 and CHEM 1902 or First Year Chemistry. **Classes:** 41 lee & 70 prac. **Assessment:** One 3hr theory exam, one 3hr theory & prac exam, prac, assignments, quizzes.

This is an introductory unit of study consisting of aspects of chemistry and biochemistry relevant in studies of basic and applied biological sciences including agriculture and the environment. It introduces students to biophysical, biological and environmental chemistry. Lecture topics include: energy in the biosphere; the interaction of radiation and matter; solutions of neutral solutes and electrolytes; emulsions, foams and gels; the biological chemistry of carbohydrates, lipids, amino acids and proteins (including enzymes), nucleic acids; the metabolism of simple sugars, fatty acids and amino acids; the mechanisms of energy release and transduction, the basic pathway of carbon fixation in photosynthesis. Emphasis is given to the theory, principles and practice of the basic analytical techniques which underpin the more advanced instrumental methods used in many laboratory-based disciplines.

Practical: Laboratory classes cover introductory chemical and biochemical analysis. Instruction is given in the safe handling of chemicals and safe practices in chemical laboratories.

AGCH 3012 Rural Environmental Chemistry

4 credit points
Prof I R Kennedy
Offered: February. Prerequisite: AGCH 2002 or ENVI 2001 and 2002. Corequisite: ENVI 3001. Classes: 1 two hour tutorial and laboratory session per week. A 6-day field trip held in Orientation week. Assessment: Practical Assessment (report) (100%).
NB: This unit is offered to students enrolled in BSc(Environmental), BLWSc and, subject to numbers, may be available to BScAgr. A maximum quota of 30 may exist. Contact Professor Kennedy.
This unit of study is based on a field excursion to areas such as the Namoi Valley near Narrabri, and the Macquarie Marshes in the Macquarie Valley, where agriculture based on irrigation has been developed. The elementary aspects of soil formation and profiling will be examined and the extent of environmental impacts of these agricultural enterprises and human settlement assessed. Observations will be made in the field and samples of water, sediment and soil brought back for analysis at the University, covering tests such as pH, oxygen content, redox potential, salt content, nutrient content, water and solute transport and pesticide content. An interactive computer exercise will be used to foster knowledge gained from this excursion and its associated sample analyses.

AGCH 3016 Agricultural Biotechnology 3

4 credit points
Assoc. Prof. LCopeland
Offered: July. Assumed knowledge: AGCH 2002, GENE 2001, MICR 2101, ANSC 2002 and CROP 2001, or the equivalent of these units. Classes: (2lec/wk, 6 tutorials, 5x4h practicals). Assessment: Assignments (20%), 1 x 3hr exam (60%) Pracxtical Book (20%).
The unit develops a basic understanding of the principles, practice and applications of biotechnology related to agricultural and environmental sciences. Students are introduced to the principles of molecular biology, recombinant technology, transformation of plants and animals, molecular diagnostics, bioinfornatics and issues concerning bioethics. The theory of biotechnology is integrated into practical and tutorial sessions. Case studies will be drawn from the plant and animal sciences, bioremediation and gene therapy areas.

AGCH 3017 Food Chemistry and Biochemistry A

4 credit points
Assoc.Prof. Copeland (Coordinator), Dr Caldwell, Dr Lees.
Offered: February. **Prerequisite:** AGCH 2001 or AGCH 2002 or BCHM (2002 or 2902) or BMED (2501 and 2502 and 2504). **Prohibition:** May not be counted with AGCH 3003 or 3005. **Classes:** 3 lee & 1 tut/wk. **Assessment:** One 2-hr exam (60%), assignments and quizzes (40%).

This unit of study aims to give students an understanding of the constituents of foods and fibres. The lecture topics cover:
- the chemistry, biochemistry and processing behaviour of major food constituents - oligosaccharides, polysaccharides, lipids and proteins;
- the relationship between molecular structure of constituents and their functionality in foods;
- natural fibres and gel-forming biopolymers - uses in foods, importance in dietary fibre and commercial products;
- enzymes in foods and food processing;
- wheat flour doughs and protein chemistry during baking and cooking;
- anti-nutritional and toxic constituents of plants and foods;
- flavour chemistry.

AGCH 3018 Food Chemistry and Biochemistry B

4 credit points

Assoc. Prof. Copeland (Coordinator), Dr Caldwell, Dr Lees.

Offered: February. **Corequisite:** AGCH 3017. **Prohibition:** May not be counted with AGCH 3003 or 3005. **Classes:** 4 prac/wk.

Assessment: Laboratory reports and assignment.

This unit of study aims to give students an understanding of the methods used in the analysis of foods and other biological materials. The laboratory exercises will include:
- Sample preparation;
- Spectroscopic, enzymic, chromatographic (including GC and HPLC) and electrophoretic methods.

AGCH 3020 Chemistry & Biochemistry of Ecosystems A

4 credit points

Prof. Kennedy (Coordinator), Dr Caldwell, Dr Lees, Assoc.Prof. Copeland.

Offered: July. **Prerequisite:** AGCH 2001 or AGCH 2002 or CHEM (2001 or 2101 or 2202 or 2301 or 2302 or 2902) or BCHM (2002 or 2902) or ENVI (2001 or 2002). **Prohibition:** May not be counted with AGCH 3001 or 3004. **Classes:** 3 lee & 1 tut/wk. **Assessment:** One 2-hr exam (60%), assignments and quizzes (40%).

This unit of study aims to give students an understanding of the chemical and biochemical processes in ecosystems. The lecture topics cover:
- the biological carbon cycle - bioenergetics of autotrophy and heterotrophy, photosynthesis, fermenation, eutrophication;
- the mineral nutrient cycles, uptake and utilization by organisms; pH balancing;
- the biological nitrogen cycle - ammonification, nitrification of ammonia, denitrification of nitrate, nitrogen fixation, ammonia and nitrate assimilation;
- the biological sulphur cycle - sulphate assimilation, sulphate reduction and dissimilation in soil and water;
- the role of the nitrogen and sulphur cycles in the acidification of ecosystems; effects of acidification on plants and animals;
- pesticides and herbicides, modes of action, metabolism and detoxification; environmental chemistry and fate of pesticides; the design of new pesticides and means of pest control;
- heavy metals and plants, mechanisms of tolerance, hyperaccumulators, halophytes.

The tutorials are designed to provide students with an insight into environmental issues and methods for monitoring and remediation of contaminants including heavy metals and pesticides.

AGCH 3021 Chemistry & Biochemistry of Ecosystems B

4 credit points

Prof.Kennedy (Coordinator), Dr Caldwell, Dr Lees, Assoc.Prof. Copeland.

Offered: July. **Corequisite:** AGCH 3020. **Prohibition:** May not be counted with AGCH 3001 or 3004. **Classes:** 4 prac/wk.

Assessment: Laboratory reports and assignment.

This unit of study aims to give students an understanding of the practical skills required for chemical and biochemical methods of analysis used in environmental chemistry. The laboratory exercises will include:
- sample preparation;
- analyses of environmental samples for organic and inorganic nutrients, products and contaminants including heavy metals and pesticides;
- experience with gas, liquid and ion chromatography, atomic absorption spectroscopy, electrochemical methods, mass spectrometry and the use of immunoassays (ELISA).

AGCH 4002 Agricultural Chemistry 4A

24 credit points

Offered: February. **Prerequisite:** AGCH 3004 or AGCH 3005 or AGCH 3020 and AGCH 3021 or AGCH 3017and AGCH 3018.

The unit of study aims to: provide students with problem-solving and communication skills required by professional chemists in enterprises concerned with agricultural production and processing, foods and beverages, and environmental science; enable students to learn to work independently in a laboratory environment; familiarise students with the research literature and methodology of biological chemistry; and provide a basis for students who wish to proceed to postgraduate work.

The unit of study will include:

Research Methods in Agricultural and Biological Chemistry
(8 credit points)

Students attend a series of workshops on scientific communication and prepare two essays each of 5000 words on topics of their choice selected from a list which covers a wide range of basic and applied areas of biological, environmental and food chemistry.

Chemistry and Biochemistry of Agricultural and Food Products and the Environment
(16 credit points)

An advanced series of lectures and laboratory classes in biological and environmental chemistry and agricultural biochemistry. The areas covered will depend on which of the optional third year Agricultural Chemistry units of study students have completed.

Research Project
(24 credit points)

Students carry out a short research project under close supervision of a member of the staff. Projects are usually available in one of the following areas of research interest within the Department: carbon and nitrogen metabolism in a variety of crop plants; biological nitrogen fixation; biochemistry of herbicides and pesticides; nutritional aspects of seed proteins; applied enzymology; organic and inorganic residues in agricultural products. Students who are interested in working in another area are invited to discuss their ideas with a member of the staff.

AGCH 4003 Agricultural Chemistry 4B

24 credit points

Offered: July. **Corequisite:** AGCH 4002.

See AGCH 4002 Agricultural Chemistry 4A.

AGCH 4004 Cereal Science 4A

24 credit points

Offered: February. **Prerequisite:** AGCH 3005.

The unit of study aims to provide students with knowledge, and problem-solving and communication skills required by professional scientists in enterprises concerned with cereal production and processing, enable students to learn to work independendy in a laboratory environment, familiarise students with the research literature and methodology of cereal science and provide a basis for students who wish to proceed to postgraduate research

Research Methods and Communications Skills
(8 credit points)

Students receive training in oral and written scientific communication and attend a program of seminars and workshops. Students research the literature and prepare 2 essays of approximately 5000 words each and an oral presentation on topics of their choice selected from a list which covers basic and applied aspects of cereal science.

Methods of Analysis of Cereal Products
(8 credit points)

A program of advanced laboratory work aimed at providing training in the main methods of chemical and biochemical analysis used in the cereal and food industries. Each laboratory exercise will include library research, development of some of the experimental protocols, preparation of necessary reagents and apparatus, and completion of a written report.

Coursework

(8 credit points)

Selected with approval of the Coordinator of the Program.

Students select 8 credit points of 3rd or 4th year units of study in areas relevant to cereal science (eg chemistry, biochemistry, molecular biology, genetics, nutrition, agribusiness, marketing). The selection of units of study will depend on which subjects students have completed prior to entering 4th Year and will be subject to the approval of the Coordinator of the Program.

Research project

(24 credit points)

Students carry out a research project on an aspect of cereal science under the supervision of a member of staff in a Department in the Faculty of Agriculture or in another location approved by the Coordinator of the Program.

AGCH 4005 **Cereal Science 4B**

24 credit points

Offered: July. **Corequisite:** AGCH 4004.

See AGCH 4004 Cereal Science 4A.

AGEC1001 Agricultural Economics 1A

6 credit points

Offered: February. **Assumed knowledge:** HSC 2 unit Mathematics. **Classes:** (3 lee & 1 tut)/wk. **Assessment:** One 3 hr exam, one essay, assignments.

An introductory unit of study serving as a foundation for other units in agricultural and resource economics. The basic structure and nature of the resource and agricultural industries are outlined. Basic economic principles as diey relate to the management of production in these sectors are introduced and illustrated bom graphically and mathematically. Topics will include: the changing structure of the Australian agricultural and resource sectors; their international context; problems of structural adjustment and technical change; government intervention; the economic, physical and biological environment in which farm firms operate; principles of resource allocation; basic farm accounts and budgets, and farm risk management. Students are expected to make use of computers in completing class work submitted for assessment.

Textbooks

L.R. (Bill) Malcolm, P.Sale and A.Egan Agriculture in Australia: An Introduction (Oxford U.P.), 1996

Reference Books

R.C. Buse and D.W. Bromley Applied Economics: Resource Allocation in Rural America (Iowa State U.P., 1975)

K.O. Campbell and B.S. Fisher Agricultural Marketing and Prices (Longman Cheshire, 1991)

F. Douglas (ed), Australian Agriculture: the complete reference on rural industry (Morescope, 1995)

C.A. Tisdell Microeconomics of Markets (Wiley 1982)

AGEC 1002 **Agricultural Economics 1B**

6 credit points

Offered: July. **Corequisite:** AGEC 1001. **Assumed knowledge:** HSC 2 unit Mathematics. **Classes:** (3 lee & 1 workshop)/wk. **Assessment:** One 2 hr theory exam, one 0.5 hr practical exam, one essay, assignments.

The unit focuses on the analytical formulation and numerical solution of empirical microeconomic problems in agriculture and the resource industries. Topics include: the measurement of the social value of alternative market equilibria; Marshallian surpluses and their limitations as measures of welfare; the rationale for and extent of government intervention in Australian and world agriculture. A wide range of problems in agriculture and resources is examined, with emphasis on formulating problems analytically and obtaining related numerical solutions. Computing workshops develop skills in using spreadsheets to solve numerical problems, and reporting results using a word-processor.

Textbooks

K O Campbell and B S Fisher Agricultural Marketing and Prices (Longman Cheshire, 1991)

Reference Books

R C Buse and D W Bromley Applied Economics: Resource Allocation in Rural America (Iowa State U P, 1975)

C A Tisdell Microeconomics of Markets (Wiley 1982)

AGEC 1003 **Economic Environment of Aust Agric 1A**

3 credit points

Offered: February. **Assumed knowledge:** HSC 2 unit Mathematics. **Classes:** (2 lee & 1 tut)/wk. **Assessment:** One 2 hr exam, assignments.

This unit of study is designed to give an understanding of some basic economic principles and to introduce the characteristics of the economic environment in which Australian agriculture operates. The topics discussed include: the structure, nature and history of the agricultural industries in Australia; agricultural adjustment in the world economy; introductory principles of production economics and farm management; elementary price theory and tie factors affecting the demand, supply and prices of agricultural commodities.

Textbooks

K.O. Campbell and J.W. Bowyer (eds) The Scientific Basis of Modern Agriculture (Sydney U.P., 1988)

K.O. Campbell and B.S. Fisher Agricultural Marketing and Prices (Longman Cheshire, 1991)

F. Douglas (ed), Australian Agriculture: the complete reference on rural industry (Morescope, 1995)

L.R. Malcolm, P. Sale and A. Egan Agriculture in Australia: An Introduction (Oxford. U.P. 1996)

AGEC 1004 **Economic Environment of Aust Agric 1B**

3 credit points

Offered: July. **Corequisite:** AGEC 1003. **Assumed knowledge:** HSC 2 unit Mathematics. **Classes:** (2 lee & 1 tut)\wk. **Assessment:** One 2 hr exam, one essay, assignments.

The focus is on the application of basic economic principles to some of the issues faced by agricultural industries in Australia. The topics discussed include: resource and environmental management; political and administrative institutions affecting Australian agriculture; means of achieving government objectives for the rural sector; structure of markets for agricultural commodities; marketing of agricultural products; the nature of international markets; problems in agricultural trade; worldwide supply and demand for foodstuffs in the future.

Textbooks

W. J. Baumol, A.S. Blinder, A.W. Gunther and J.R.L. Hicks, Economics. Principles and Policy (Harcourt, 1992)

K. O. Campbell and B. S. Fisher Agricultural Marketing and Prices (Longman Cheshire, 1991)

F. Douglas (ed), Australian Agriculture: the complete reference on rural industry (Morescope, 1995)

L. R. Malcolm, P. Sale and A. Egan, Agriculture in Australia: An Introduction (Oxford U.P. 1996)

AGEC 1031 **Resource Economics 1**

6 credit points

Offered: July. **Corequisite:** ECON 1001. **Assumed knowledge:** HSC 3 unit Mathematics. **Classes:** (3 lee & 1 workshop)/wk. **Assessment:** One 2.5 hr exam, one 0.5 hr practical exam, classwork and assignments.

This unit provides an introduction to the economics of natural resources. Classification of natural resources. History of resource utilisation and industries in Australia. Current significance and issues of natural resources in the Australian and global economies. The role of the economist in analysing resource issues. Resource economics vs general economics. Simple analytics of natural resource economics. Resources considered will include land (eg. agriculture, forestry, minerals and energy, land degradation), water (eg. irrigation, urban, fishing) and the environment (eg. atmosphere, biodiversity, pollution). Includes 2 days of excursion.

Reference Books

G. Aplin Australians and meir Environment (Oxford U.P, 1998)

W. J. Baumol, A.S. Blinder, A.W. Gunther and J.R.L. Hicks Economics. Principles and Policy 2nd Aust, edn (Harcourt, 1992).
R.C. Buse and D.W. Bromley Applied Economics: Resource Allocation in Rural America (Iowa State U.P., 1975)
Department of the Environment, Sport and Territories, State of the Environment Australia 1996 (CSIRO, 1996)

AGEC2001 **Commodity Price Analysis 2**

8 credit points

Offered: February. **Prerequisite:** Agricultural Economics I orAGEC 1002 or Economic Environment of Australian Agriculture or (AGEC 1003 and AGEC 1004) or ECON 1001. **Classes:** (3 lee & 1 tut)/wk. **Assessment:** One 3hr exam, classwork and assignments.

This unit is focussed on the analysis of prices, pricing mechanisms and the operations of markets for agricultural and resource commodities and products. Topics include technical vs fundamental analysis of prices; constructing price indexes; the theoretical foundation of consumer demand functions; theoretical relationships and empirical evidence concerning demand elasticities; aggregate supply relationships under perfectly and imperfectly competitive markets; equilibrium price determination in competitive markets; pricing by oligopolies and monopolies; structure, conduct and performance in industry; formulating structural models of commodity markets; reduced form models; partial and total elasticities; marketing services and marketing margin relationships; modelling expectations and other aspects of market dynamics; impact and dynamic multipliers; spatial markets and spatial pricing; product characteristics and hedonic price relationships. Applied examples from domestic and international agricultural and resource industries will be used.

Textbooks

W.G. Tomek and K.L. Robinson Agricultural Product Prices (Cornell University Press, 1990)

Reference Books

RG. Helmberger and J.P. Chavas The Economics of Agricultural Prices (Prentice-Hall, 1996)
J. Hirschleifer and A. Glazer Price Theory and Applications (Prentice-Hall, 1992)
D.R. Kamerachen and L.M. Valentine Intermediate Microeconomic Theory (South-Westem, 1977)
M. Wisniewski Introductory Mathematical Methods in Economics (McGraw-Hill, 1991)

AGEC 2003 **Production Economics 2**

8 credit points

Offered: July. **Prerequisite:** Agricultural Economics 1 orAGEC 1001 orAGEC 1031 or ECON 2001 or Economics II or Economic Environment of Australian Agriculture or (AGEC 1003 and AGEC 1004). **Classes:** (3 lee & 2 workshop)/wk. **Assessment:** One 1.5hr exam, one 1.5hr prac exam, assignments.

This unit has two components. The first focuses on the analysis of production based on neoclassical production functions. Topics include: graphical and mathematical representation of process level and aggregate production relationships; factor-product, factor-factor and product-product problems; optimal resource allocation in unconstrained and constrained situations; shadow prices of resources; factor demand and product supply equations, cost and profit functions; duality theory; economies of scale, size and scope; technical, allocative and economic efficiency and their assessment; time in production; modelling and measuring productivity and technical change. The second part focuses on linear activity analysis. Topics include basic input-output analysis and elements of linear programming. Graphical and mathematical representation of linear constrained optimization models; primal and dual solutions; post-optimality analysis; parametric programming.

Textbooks

D.L. Debertin Agricultural Production Economics (Macmillan, 1986)
S. M. Lee et al. Management Science (Wm C Brown, 1990)

Reference Books

B.R. Beattie and CR. Taylor The Economics of Production (Wiley, 1985)
B.R. Binger and E. Hoffman Microeconomics with Calculus (Scott, Foresman, 1988)
J. P. Doll and F. Orazem Production Economics: Theory with Applications (Wiley, 1984)
A. N. Rae Agricultural Management Economics. Activity Analysis and Decision Making (CAB International, 1994)

AGEC 2005 **Applied Commodity Modelling 2**

4 credit points

Offered: February. Prerequisite: Econometrics I or (ECMT1010 and ECMT 1020) or (MATH 1001 and 1002 and 1003 and 1005). **Prohibition:** AGEC 2006 and AGEC 2007. **Classes:** (2 lee & 1 tut/ lab session)/wk. **Assessment:** One 1 hr exam, one 1 hr prac exam, assignments.

The unit focuses on the concepts and basic procedures of regression analysis and the application of these methods to the analysis of economic data in the agricultural and resource sectors. Review of concepts of estimation and hypothesis testing. Simple regression model. Estimation and testing under classical assumptions. Multiple regression models and ordinary least squares estimation and testing under classical assumptions. Dummy variables. Lag variables. Deterministic model mis-specification. Single vs simultaneous equation models. Uses and limitations of graphical data analysis. Common departures from classical assumptions, their implications for estimation and improved methods of estimation. Students will learn the concepts and methods and develop skills in formulating and estimating models.

Textbooks

R.S. Pindyck and D.L. Rubinfeld Econometric Models and Economic Forecasts (McGraw-Hill, 1997)

Reference

K. White et al SHAZAM User's Reference Manual (McGraw-Hill, 1997)

AGEC 2006 **Applied Commodity Modelling Theory 2**

2 credit points

Offered: February. **Prerequisite:** Econometrics I or (ECMT 1010 and ECMT 1020) or (MATH 1001 and 1002 and 1003 and 1005). **Prohibition:** AGEC 2005. **Classes:** 2 lec/wk. **Assessment:** One **1** hr exam, assignments.

Review of concepts of estimation and hypothesis testing. Simple regression model. Estimation and testing under classical assumptions. Multiple regression models and ordinary least squares estimation and testing under classical assumptions. Dummy variables. Lag variables. Deterministic model mis-specification. Single vs simultaneous equation models. Uses and limitations of graphical data analysis. Common departures from classical assumptions, their implications for estimation and improved methods of estimation.

Textbooks

R.S. Pindyck and D.L. Rubinfeld Econometric Models and Economic Forecasts (McGraw-Hill, 1997)

Reference

K. White et al SHAZAM User's Reference Manual (McGraw-Hill, 1997)

AGEC 2007 **Applied Commodity Modelling Practical 2**

2 credit points

Offered: July. **Prerequisite:** AGEC 2006. **Prohibition:** AGEC 2005. **Classes:** One 2hr lab/wk. **Assessment:** One 1 hr prac exam, assignments.

Formulation of simple regression models. Estimation and testing under classical assumptions. Formulation of multiple regression models and use of ordinary least squares estimation method. Hypothesis testing under classical assumptions. Modelling using dummy variables and lag variables. Empirical procedures for coping with deterministic model mis-specification. Examining data to test for the classical stochastic assumptions and implementing improved methods of estimation when needed.

Textbooks

R.S. Pindyck and D.L. Rubinfeld Econometric Models and Economic Forecasts (McGraw-Hill, 1997)

Reference

K. White et al SHAZAM User's Reference Manual (McGraw-Hill, 1997)

AGEC 3001 Agribusiness Management 3

8 credit points

Offered: February. Prerequisite: AGEC 2003 or Economic Environment of Australian Agriculture or (AGEC 1003 and AGEC 1004). **Classes:** (3 lee & 2 workshop)/wk. **Assessment:** One 3hr exam, assignments.

This unit of study is designed to introduce the economic principles and techniques of business management as they apply to farm and agribusiness firms. The topics covered will include: management goals and objectives; budgeting; gross margins analysis; parametric budgeting; sources of management information and its analysis; simple systems simulation; applications of linear programming to farm and agribusiness planning; financial management; risk in planning and management; cash, credit, debt and taxation management; evaluation of investment and firm growth alternatives; acquisition and transfer of assets; the role of financial institutions in the rural credit market.

Practical: An integrated set of workshops is used to provide practical experience in firm planning utilising budgeting, gross margins analysis, linear programming, simulation methods and other techniques of analysis.

Textbooks

P.J. Barry et al. Financial Management in Agriculture (Interstate, 1995)

J.B. Hardaker et al. Coping with Risk in Agriculture (CABJ997)

J.P. Makeham et al. Best Bet Farm Decisions (U. of New England Press, 1968)

Q. Paris An Economic Interpretation of Linear Programming (Iowa State U.P., 1991)

A.N. Rae Agricultural Management Economics (CAB, 1994)

P.A. Rickards and D.J. McConnell Budgeting, Gross Margins and Programming for Farm Planning (U. of New England Press, 1967)

R. Turvey Complan Handbook No 8: Enterprise Budgets for North West N.S.W. (N.S.W. Department of Agriculture, 1988)

AGEC 3002 Agricultural and Resource Policy

8 credit points

Offered: July. **Prerequisite:** (AGEC 2001 & AGEC 2003) or ECON 2001 or ECON 2901 or Economics II. **Classes:** (3 lee & **1** tut)/wk. **Assessment:** One 2.5hr exam and assignments.

The topics discussed include: basic theoretical frameworks for economic evaluation of policy formation (including Pareto welfare economics and public choice meory); market and government failure; the institutional structure of agricultural and resource policy formulation in Australia; microeconomic issues in agricultural and resource policy; and issues arising from linkages between agriculture and the resource industries and with the rest of the economy. Students will be expected to read widely for this course.

Textbooks

D. Godden Agricultural and Resource Policy: principles and practice (Oxford U.P., 1997)

AGEC 3004 **Research Methods 3**

4 credit points

Offered: July. **Prerequisite:** AGEC 2003 and AGEC 2002 or AGEC 2005 or (AGEC 2006 and AGEC 2007) or ECMT 2021. **Classes:** (3 lee & 1 lab)/wk for 6 weeks. **Assessment:** One **1**.5 hr exam, assignments.

This unit deals with the nature of research and inquiry in applied economics. Topics covered will include: alternative philosophical perspectives on inquiry; scientific method; inductive thought and and deductive logic; creativity; research as an orderly process of enquiry; preparation of research proposals; secondary data sources for agricultural and resource economists; collection of primary data; statistical design of sample surveys; questionnaire construction; interviewing techniques; and methods of analysis of survey data. Topics are illutsrated with examples of research in theoretical economics, empirical discipline-advancing research, empirical exploratory research, and research using policy-evaluation modelling.

Textbooks

J. A. Sharp and K. Howard The Management of a Student Research Project 2nd edn (Gower Publishing, 1996)

P. Phelan and P. Reynolds Argument and Evidence (Routledge, 1996)

Reference books

G.L. Johnson Research Methodology for Economists: Philosophy and Practice (Macmillan, 1986)

C.A.Moser and G.Kalton Survey Methods in Social Investigation 2nd edn (Heinemann, 1971)

AGEC 3031 Resource Economics 3$

8 credit points

Offered: February. **Prerequisite:** AGEC 2003. **Classes:** (3 lee & 2hr lab session)/wk. **Assessment:** One 3 hr exam, assignments.

NB: Not offered in 2001.

This unit has two components. The first half deals with non-market priced goods and services, how such goods and services arise as externalites, their implications for the efficiency of resource allocation, and methods of valuation to direct improved resource allocation. Examples will be drawn from environemntal management. The second part of the unit deals with dynamic optimisation of natural resource use and covers the mathematical formulation of the problem of optimal use of renewable and finite non-renewable resources over time, the nature and economic interpretation of optimality conditions, and methods (optimal control and dynamic programming) for identifying optimal solutions. Example applications may include mining, forest rotations, waste absorptive capacity, recruitment and harvesting of natural populations.

Textbooks

J.M. Conrad and C.W. Clark Natural Resource Economics: Notes and Problems (Cambridge University Press, 1987)

N.Hanley, J.F. Shogren and B.White Environmental Economics in Theory and Practice (Macmillan, 1997)

N.Hanley and C.L. Splash Cost-Benefit Analysis and the Environment (Edward Elgar, 1993)

AGEC 4001 **Research Project 4**

16 credit points

Offered: Full Year (starts Feb). **Corequisite:** Any 24 credit points from Level 4000 AGEC units. **Assessment:** Thesis or project reports.

In this unit of study, students develop skills in economic research by designing, undertaking and reporting on either a single research study (thesis) or several smaller research exercises.For a thesis, students undertake research on an approved topic under the supervision of a member of staff and prepare a report of approximately 25,000 words in length. Students undertaking research exercises typically work on individual and group exercises on three or four successive research topics, each under the guidance of a staff member, and each involving an individual or group report. Students are allocated to the thesis or the exercises form of research training on the basis of available Departmental resources and the advice and approval of the coordinator for Research Project.

AGEC 4003 Applied International Trade

8 credit points

Offered: February. **Prerequisite:** AGEC 2001 or Economics II or (ECON 2001 and ECON 2002) or (ECON 2901 and ECON 2902). **Classes:** (3 lee & 1 tut)/wk. **Assessment:** One 3hr exam, assignments.

In this unit of study the basic economic principles underlying international trade in agricultural and resource commodities and the policies involved will be presented. Issues related to trade and development will also be considered. The main topics covered will include: trends in agricultural and resources trade; trade policies of importing and exporting nations, including issues such as food aid and surplus disposal programs; economic integration and impacts on international commodity trade; international trade policy making, including GATT and WTO; the impact of exchange rates and other macroeconomic variables on international trade in commodities.

Textbooks

J.P. Houck Elements of Agricultural Trade Policies (Macmillan, 1986)

D. Salvatore International Economics (Prentice Hall, 1994)

Reference book

N. Wallace and J. Evans (eds) International Commodity Markets: An Australian Perspective (Australian Bureau of Agricultural and Resource Economics, 1993)

AGEC 4004 **Applied Marketing**

8 credit points

Offered: July. Prerequisite: AGEC 2001 or (AGEC 1003 & AGEC 1004) or Economic Environment of Australian Agriculture or Economics II or ECON 2001 or ECON 2901. Classes: (3 lec & 1 tut/ excursion)/wk. Assessment: One 3hr exam, assignments.

This unit of study will provide an understanding of the operation and principles of marketing, with practical applications focused on the food and fibre markets.

The main topics covered will include: firm-level marketing mix and marketing strategy decision making; marketing management and planning; market research and information; futures markets and other risk sharing devices. The unit of study will also address the organisation and trends of food and fibre marketing in Australia; food and fibre industrial marketing, including value-adding and power in the supply chain; market efficiency; and international marketing by agribusiness firms.

Textbooks

R.L Kohls and J.N. Uhl Marketing of Agricultural Products (Macmillan, 1990)

P. Kotler et al. Marketing: Australia and New Zealand (Prentice-Hall, 1994)

D.I.Padberg, C.Ritson and L.M.Albisu Agro-food Marketing [CAB International, 1997]

G.J.Seperich, M.W.Wolverton and J.C.Beierlein Introduction to Agribusiness Marketing [Prentice-Hall, 1994]

AGEC 4005 **Natural Resource Economics**

8 credit points

Offered: July. Prerequisite: (AGEC 2001 and AGEC 2003) or Economics II or (ECON 2001 and ECON 2002). Classes: (3 lec & 1 tut)/wk. Assessment: One 3 hr exam, assignments.

A unit of study in natural resource economics of relevance to agriculture and the resource industries. Issues discussed are: the environment as a source of environmental services; socially efficient resource allocation and Pareto welfare economics; market failure and characteristics of environmental services; benefit cost analysis of public projects, including the modification of environmental services; non-depletable resources and pollution; depletable resources; irreversibility; sustainability. Applications include land degradation, fisheries, forestry, land-use planning and the enhanced greenhouse effect.

Textbooks

S. C.Hackett Environmental and Natural Resourec Economics (M.E. Sharpe, 1998)

N.Hanley, J.F. Shogren and B.White Environmental Economics in Theory and Practice (Macmillan, 1997)

D.W.Pearce and R.K.Tumer Economics of Natural Resources and the Environment (John Hopkins, 1990)

AGEC 4007 **Spec Topics Agricult/Resource Economics**

8 credit points

Offered: February, July. **Classes:** 1 tut/wk. **Assessment:** One 2hr exam, assignments/essays, term paper.

This unit deals with the specialised areas of agricultural and resource economics of particular interest to approved students. The student will read under the guidance of a member of staff and complete designated learning tasks.

AGEC 4008 **Quantitative Planning Methods 4**

4 credit points

Offered: February. Prerequisite: AGEC 2003. Corequisite: AGEC 3001 or AGEC 3031. Classes: (3 lec & 1 tut/lab session)/wk for first 7 weeks of semester. Assessment: One 1.5 hr exam, assignments.

This unit examines the use of formal optimization methods at both the individual firm level and the sectoral level. Sectoral level planning applications considered include transportation and plant location studies; spatial equilibrium analyses; input-output analysis and computable general equilibrium analysis. Firm level applications include multi-period planning, queuing problems, inventory analysis, and replacement problems.

Textbooks

L.J. Moore et al. Management Science 4th edn (Allyn and Bacon, 1993)

Q. Paris An Economic Interpretation of Linear Programming (Iowa State U.P., 1991)

Reference books

P.B.R. Hazell and R.D. Norton Mathematical Programming for Economic Analysis in Agriculture (Macmillan, 1986)

W. Winston Operations Research Applications and Algorithms (PWS-Kent, 1991)

AGEC 4009 **Agricultural Finance & Risk Management 4**

4 credit points

Offered: February. Prerequisite: AGEC 2003. Corequisite: AGEC 3001 or AGEC 3031. Classes: (4 lec & 1 tut/lab session)/wk for 6 weeks. Assessment: One 1.5 hr exam, assignments.

The first component of this unit is focused on concepts of risk measurement, risk attitudes and decision making under risk. Topics include: subjective probability, adjusting beliefs as a result of new information; alternative measures of risk; decision making under risk; expected utility theory; valuing information; stochastic dominance; E-V analysis; generalizations of expected utility theory; analysis of in-firm measures to cope with risk including diversification and flexibility; elements of quadratic programming; insurance, futures, options and other market instruments for managing risk. The second part examines issues of financial analysis and control. Topics include financial relationships between debt/equity levels and risk, optimal debt levels, cost of capital, investment, and capital budgeting. Financial and risk management practices in Australian agriculture are reviewed.

Textbooks

J.R. Anderson et al. Agricultural Decision Analysis (Iowa State U.P., 1977)

A.K. Dixit and R.S. Pindyck Investment under Uncertainty (Princeton U.P., 1994)

H. Levy and M. Sarnat Capital Investment and Financial Decisions (Prentice Hall, 1994)

Reference books

P.B.R. Hazell and R.D. Norton Mathematical Programming for Economic Analysis in Agriculture (Macmillan, 1986)

P.J. Barry, et al. Financial Management in Agriculture 5th edn (Interstate Press, 1993)

AGEC 4010 **Contemporary Issues 4A**

4 credit points

Offered: February. **Corequisite:** AGEC 4011 and at least 12 other level 4 AGEC credit points. **Classes:** 2 lec/wk. **Assessment:** One 2 hr exam, assignments.

A series of lectures, seminars and workshops designed to provide students with enhanced professional skills and increased awareness of contemporary issues. Initially, sessions will focus on communication skills, including report writing, preparation of policy briefs, seminar and workshop presentations. Other sessions will be focussed on aspects of professional ethics, attitudes and responsibilities and leadership. Participatory activities such as team debates and mock inquiry hearings addressing issues of current relevance to agricultural /resource economists are used to develop the student's communication skills and knowledge of issues. Seminars by guest speakers on current issues may be scheduled.

AGEC 4011 **Contemporary Issues 4B**

4 credit points

Offered: July. **Corequisite:** AGEC 4010 and at least 12 other level 4 AGEC credit points. **Classes:** 2 lec/wk. **Assessment:** One 2 hr exam, assignments.

This unit continues the series commenced in Contemporary Issues 4A. Through regular seminars by guest speakers and occasional workshops or other participatory activities, students examine a broad range of domestic and international issues of current relevance to Australian agricultural and resource economists.

AGEC 4020 Agricultural Economics 4A

24 credit points

Offered: February. **Prerequisite:** AGEC 2001, AGEC 2003. **Corequisite:** AGEC 4021 Agricultural Economics 4B.

Agricultural Economics 4A and 4B represent a full year's study of agricultural economics. Through core and elective components (48 credit points minimum), students will study the economic theory and analysis of agricultural markets, trade and policy.

Unless taken as separate units of study in third year,

- (i) the following components must be included:
  Agricultural and Resource Policy 3 (8 credit points)
  Agricultural Finance and Risk Management (4 credit points)
  Applied Commodity Modelling 2 (4 credit points)
  Applied International Trade 4 (8 credit points)
  Research Project (8 credit points); and
- (ii) the following units may be included
  Agribusiness Management 3 (8 credit points)
  Applied Marketing 4 (8 credit points)
  Contemporary Issues 4A (4 credit points)
  Contemporary Issues 4B (4 credit points)
  Quantitative Planning Methods 4 (4 credit points)
  Up to 8 credit points as approved by the Head of Department.

Research Project will involve designing and undertaking a small economics research study under the supervision of a member of staff over two semesters. For contents of other components, see the description of that unit of study. Credit for components completed over the year will be allocated between Agricultural Economics 4A and 4B by the Head of Department.

Textbooks

D.I.Padberg, C.Ritson and L.M. Albisu Agro-food Marketing (CAB International, 1997)

G.J. Seperich, M.W. Wolverton and J.C. Beierlein Introduction to Agribusiness Marketing (Prentice-Hall, 1994)

AGEC 4021 Agricultural Economics 4B

24 credit points

Offered: July. **Prerequisite:** AGEC 2001, AGEC 2003. **Corequisite:** AGEC 4020.

See AGEC 4020 Agricultural Economics 4A.

AGEC 4022 Agribusiness 4A

24 credit points

Offered: February. **Prerequisite:** AGEC 3001, 24 credit points of 3rd year Agr Sc. **Corequisite:** AGEC 4023.

Agribusiness 4A and 4B represent a full year's study of the economic aspects of agribusiness. Through core and elective components (48 credit points minimum), students will study the operations and performance of individual firms, markets and government in the agricultural and related sectors.

Unless taken as separate units of study in third year,

- (i) the following components must be included:
  Agricultural and Resource Policy 3 (8 credit points)
  Commodity Price Analysis 2 (8 credit points)
  Research Project (4–8 credit points); and
- (ii) the following units may be included
  Agricultural Finance and Risk Management (4 credit points)
  Applied International Trade 4 (8 credit points)
  Applied Marketing 4 (8 credit points)
  Financial Accounting Concepts (6 credit points)
  Management Accounting Concepts (6 credit points)
  Quantitative Planning Methods 4 (4 credit points)
  Up to 8 credit points as approved by the Head of Department.

Research Project will involve designing and undertaking a small economics research study under the supervision of a member of staff over two semesters. For contents of other components, see the description of that unit of study. Credit for components completed over the year will be allocated between Agribusiness 4A and 4B by the Head of Department.

AGEC 4023 Agribusiness 4B

24 credit points

Offered: July. **Prerequisite:** AGEC 3001, 24 credit points of 3rd year Agr Sc. **Corequisite:** AGEC 4022.

See AGEC 4022.

AGEC 4024 Resource Economics 4A

24 credit points

Offered: February. **Prerequisite:** AGEC 2001, AGEC 2003 and 24 credit points of 3rd year Agr Sc. **Corequisite:** AGEC 4025.

Resource Economics 4A and 4B represent a full year's study of the economics of natural resources. Through core and elective components (48 credit points minimum), students will study the economic theory and analysis of markets, market imperfections, trade and government policy for the resources sector.

Unless taken as separate units of study in third year,

- (i) the following components must be included:
  Agricultural and Resource Policy 3 (8 credit points)
  Natural Resource Economics 4 (8 credit points)
  Research Project (8 credit points); and
- (ii) the following units may be included:
  Agribusiness Management 3 (8 credit points)
  Agricultural Finance and Risk Management (4 credit points)
  Applied Commodity Modelling 2 (8 credit points)
  Applied International Trade 4 (8 credit points)
  Applied Marketing 4 (8 credit points)
  Contemporary Issues 4A (4 credit points)
  Contemporary Issues 4B (4 credit points)
  Quantitative Planning Methods 4 (4 credit points)
  Up to 8 credit points as approved by the Head of Department.

Research Project will involve designing and undertaking a small economics research study under the supervision of a member of staff over two semesters. For contents of other components, see the description of that unit of study. Credit for components completed over the year will be allocated between Resource Economics 4A and 4B by the Head of Department.

AGEC 4025 Resource Economics 4B

24 credit points

Offered: July. **Prerequisite:** AGEC 2001, AGEC 2003 and 24 credit points of 3rd year Agr Sc. **Corequisite:** AGEC 4024.

See AGEC 4024 Resource Economics 4A.

AGEC 4027 Introductory Land and Water Economics

4 credit points

Offered: February. Classes: 2 lec/wk. **Assessment:** One 2 hr exam, assignments.

NB: Not offered in 2001.

An overview is provided of economic analysis of natural resources in the context of making choices about resource use. Initial lectures sketch the need for economic principles in analysing resource use, and develop basic economic principles for evaluating production and consumption of commodities. Property rights and time are emphasised as key areas where basic economic principles require modifying in a resources context: these principles are used to develop tools of economic analysis in benefit-cost analysis; economics of pollution; and optimising use of natural resources over time. Six particular natural resource problems are examined: agricultural and urban water supply; blue-green algae; intractable waste; sustainable development; population and food supply; and the enhanced greenhouse effect.

Textbooks

A.Randall Resource Economics: An Economic Approach to Natural Resource and Environmental Policy 2nd edn (Wiley, 1987)

D.W.Pearce and R.K.Turner Economics of Natural Resources and the Environment (Johns Hopkins, 1990)

AGEC 4031 Resource Economics Project 4$

12 credit points

Offered: Full Year (starts Feb). **Corequisite:** Any 32 credit points from AGEC 4000 level. Classes: Full year (starst Feb).

Assessment: Thesis or project reports.

NB: Not offered in 2001.

In this unit of study, students develop skills for researching the economics of bio-physical systems. Students design, undertake and report on either a single research study (thesis) or several smaller research exercises. For a thesis, students undertake research on an approved topic in resource economics under the supervision of a member of staff and prepare a report of approx-

imately 20,000 words in length. Students undertaking research exercises typically work in groups on three successive research topics, each under the guidance of a staff member, and each involving an individual or group report. Students are allocated to the thesis or the exercises form of research training on the basis of available Departmental resources and the advice and approval of the coordinator for Research Project.

AGEC 4041 **Research Methods 4***

4 credit points
Offered: February. **Prerequisite:** AGEC 2003 and AGEC 2005. **Classes:** (3 lee & 1 lab)/wk for 6 weeks. **Assessment:** One 1.5hr exam, assignments.
NB: Not offered in 2001.
This unit deals with the nature of research and inquiry in applied economics. Topics covered will include: alternative philosophical perspectives on inquiry; scientific method; inductive thought and deductive logic; creativity; research as an orderly process of enquiry; preparation of research proposals; secondary data sources for agricultural and resource economists; collection of primary data; statistical design of sample surveys; questionnaire construction; interviewing techniques; and methods of analysis of survey data. Topics are illustrated with examples of research in theoretical economics, empirical discipline-advancing research, empirical exploratory research, and research using policy-evaluation modelling.
Textbooks
J. A. Sharp and K. Howard The Management of a Student Research Project 2nd edn (Gower Publishing, 1996)
P. Phelan and P. Reynolds Argument and Evidence (Routledge, 1996)
Reference books
G.L. Johnson Research Methodology for Economists: Philosophy and Practice (Macmillan, 1986)
C.A.Moser and G.Kalton Survey Methods in Social Investigation 2nd edn (Heinemann, 1971)

AGRF4000 **Professional Experience**

0 credit points
Offered: February, July.
Requirements for the 18 weeks outlined in 'Regulations".

AGRF 4001 **Special Program 4A**

24 credit points
Offered: February.
Students may enrol in Special Program after consultation with, and with the approval of, the Dean. This interdisciplinary unit of study structure is available for students who wish to undertake Fourth Year optional units of study combinations which are not offered by any individual department.

AGRF 4002 **Special Program 4B**

24 credit points
Offered: July.
See Special Program 4A.

AGRO 2002 **Crop and Pasture Agronomy**

6 credit points
Offered: July. **Classes:** (2 lee & 1 tut)/wk. **Assessment:** One 2hr exam, one essay divided into a sequence of chapters.
Lectures cover the agronomic and ecological principles of crop and pasture production, together with farming systems in summer and winter rainfall zones and semi arid areas. Broad scale resource and environmental issues such as soil acidification, agricultural pollution and salinity amelioration will be discussed. The tutorials will lead students through their own consultant's report on the agronomic and management opportunities provided by a farm or region of their choice. The students will be required to identify the soil and climate resources and the supporting infrastructure and bring these together to create and recommend farming and grazing enterprises for the future.
Reference books
J.E. Pratley (ed.) Principles of Field Crop Production (Sydney U.P., 1988)
P.V. Charman and B.W. Murphy Soils: Their Properties and Management (Sydney U.P., 1991)

AGRO 3001 **Agronomy 3**

8 credit points
Dr Jacobs
Offered: February. **Prerequisite:** AGRO 2002 or CROP 1001 or HORT1001 or LWSC 1001. **Classes:** (3 lee, 3hr prac & 2hr seminar)/wk, [Excursion wk3: one day field practical]. **Assessment:** One 2hr exam(50%), assignment(40%), presentations(10%).
This unit of study introduces the principles and practice of the management of vegetation and water resources. The unit will describe the resource base, examine the tools available to manage the resources and address issues of sustainable utilisation of the resources. Crop, pasture and natural ecosystems will provide the focus for the lecture topics. The implications of government regulation of resource utilisation for primary industry and the environment will be discussed. Workshops will provide experience in resource auditing and in the construction and operation of environmental models and decision support systems to see how these techniques aid in resource management. A module of this course will examine the extension and communication of information to rural stakeholders. Practical sessions will allow students to develop skills in identification of pasture species, assessing pasture productivity and grazing
Practical: Field Sessions will allow students to develop stalls in identification of pasture species, assessing pasture productivity & grazing management.
Reference books
V. Squires and P. Tow (eds) Dryland farming—a systems approach—an analysis of dryland agriculture in Australia (Sydney University Press, 1991)
Brian Roberts The quest for sustainable agriculture and land use (U.N.S.W. Press, 1995) R Groves. Australian vegetation. (CSIR01987)
J Hardisty et al. Computerised environmental modelling. (John Wiley & Sons 1993)
C.J. Pearson and R.L. Ison Agronomy of grassland systems. (Cambridge, 1997)
D.I. Smith. Water in Australia: resources and management. (Oxford University Press, 1998)

AGRO 4001 **Agronomy 4A**

24 credit points
Mr de Kantzow
Offered: February. **Prerequisite:** AGRO 3001.
Agronomy is the science of growing plants-from creating on-farm opportunities to environmental protection and ecosystem management. Plant physiology and plant nutrition are addressed with formal lecture and practical session courses while crop agronomy, pasture agronomy and sustainability involve excursions and residential study periods in rural locations which allow the study of active field situations. Extensive opportunities are provided for field work and a personal research project is part of the program. This can be selected from a wide variety of topics; data may be gathered before or during the academic year.
Core units:
- Crop Agronomy & Sustainable Management (8 credit points)
- Crop Nutrition (6 credit points)
- Crop & Pasture Physiology (4 credit points)
- Pasture Agronomy (4 credit points)
- Special Studies (6 credit points)
- Research Project (12 or, with approval, 20 credit points)

plus units to total 48 credit points as approved by the Head of Department.
Crop Agronomy and Sustainable Management
8 credit points. Coordinator: Mr de Kantzow. Offered: March & July. Assessment: one 3hr exam, review paper.
Afield-based course on management of crops with particular reference to (i) their ecology; (ii) their farming system-including technical and economic analysis of their management and their roles and restrictions within existing and potential farming systems; and (iii) their end uses, and how to better meet the technical needs of markets. Students use computer-based decision support systems to assist in simulating crop management. Analytical skills are developed by solving hypothetical problems in crop production.

Crop Nutrition

6 credit points. Coordinator: Dr Campbell. Offered: March & July. Assessment: one 2hr exam, assignments.

The course develops nutritional principles for agricultural production, food systems and for environmental protection. This course emphasises practical techniques. Practical sessions cover an integrated series of experiments on growth of a crop as affected by nutrition, the physiology of nutrient distribution during growth, diagnosis of nutrient deficiencies, C/N ratios, carbon fixation and hydroponics. Students set up and monitor their own nutrition experiment. Nutrient supply from compost and biosolids, mineral and heavy metal uptake and quality of nutrient inputs for plant growth are considered. Nutrient function and its relationship to plant growth, and consultancy problems are emphasised.

Excursions deal with waste management issues in the Sydney region, how useful agricultural products are produced, and utilisation of by-products.

Textbooks

R.W. Pearcy et al. (eds) Plant Physiological Ecology. Field Methods and Instrumentation (Chapman & Hall, 1989)

H. Marschner Mineral Nutrition of Higher Plants 2nd edn (Academic Press, 1995)

Crop and Pasture Physiology

4 credit points. Coordinator: Dr Jacobs. Offered: March. Assessment: one 2hr exam, assignments.

This course examines the physiology of crop and pasture plants. The course extends the concepts introduced in Crop Science 2. The impact of environment and management on photosynthesis, respiration, water relations, and plant development will be discussed in relation to the formation of grain or forage, and the quality of major crop and pasture species. The use of instrumentation to measure the physiological responses of plants to stress will be featured in practical sessions.

Pasture Agronomy

4 credit points. Coordinator: Dr Jacobs. Offered: March. Assessment: one 2hr exam, assignments, seminars.

This course explores the establishment, management and ecology of pastures and forage crops. The course extends the concepts introduced in Agronomy 3 and is based around field trips to different climatic and production regions of N.S.W, and New Zealand. Practical aspects of the role of pastures in Australian farming systems and their importance in the nutrition of grazing animals will be featured.

Special Studies

6 credit points. Coordinator: Mr de Kantzow. Offered: July. Assessment: one 2hr exam, assignments.

A combination of short courses in which the topics include Land Management (a series of visits to Government agencies which manage natural resources eg the EPA, Department of Lands and Water Conservation, National Parks and Wildlife), Pesticide Management (eg Avcare certification as a voluntary option) and product utilization and processing (flour milling, starch manufacture).

Research Project and Thesis

12 or, with approval, 20 credit points.

Supervised research on a topic chosen by the student in the area of cropping systems, cereals production, plant nutrition, food systems or pasture and weed ecology.

AGRO4002 **Agronomy 4B**

24 credit points

Offered: July. **Prerequisite:** AGRO 3001. **Corequisite:** AGRO 4001.

See AGRO 4001 Agronomy 4A.

ANSC 2002 **Animal Science 2**

6 credit points

Assoc. Prof. Maxwell, Dr R. Taylor, Assoc. Prof. W Bryden, Assoc. Prof. DBalnave, Dr M. Hyde, Dr D. Evans, Dr M Collier

Offered: July. **Prerequisite:** CROP 1001 and CROP 1002 or HORT 1001 and HORT 1002 or LWSC 1001 and LWSC 1002. **Corequisite:** AGCH 2002. **Classes:** 51 lee & 39hr prac. **Assessment:** 60% exam (one 3hr paper), 40% other assessments including assignments and practicals.

The unit of study is an integrated one designed to cater for students terminating studies in animal sciences at the end of Second Year and to provide the basis for students intending to specialise in animal production in later years. The lectures will be as outlined below:

Animal Industries: A series of lectures which describes the characteristics ofthe animal production industries. Lectures will be reinforced by practical classes to be held at Camden.

Animal Structure and Function: A series of lectures, tutorials and practical classes which describes the structure and function of agricultural animals.

Textbooks

W.O. Reece Physiology of Domestic Animals (Lea and Febiger, 1991)

P. McDonald et al. Animal Nutrition 4th edn (Longman Scientific & Technical, 1988)

ANSC 2003 **Animal Science 2 for Agr Economics**

4 credit points

Assoc. Prof. Maxwell, Assoc. Prof. Gooden, Dr Hyde, Camden staff

Offered: July. **Classes:** 19 lee & six 4hr prac classes. **Assessment:** One 1.5hr exam, one research project/assignment.

A series of lectures which describes characteristics of the animal production industries-locations, breeds of animals, management practices, products, marketing. Lectures and practical classes form a portion of the unit of study Animal Science 2 undertaken in the BScAgr degree. In addition, students will complete a project involving economic analysis of an animal enterprise.

ANSC 3001 **Animal Nutrition 3**

8 credit points

Dr Hyde, Assoc. Prof. Balnave, Prof. D. Fraser

Offered: February. **Prerequisite:** ANSC 2002. **Classes:** 12hrtut, 12 pracs, 2 excursions, 18hr project. **Assessment:** One 2hr exam(40%), two assignments (30%), project (20%), quiz (5%), self-assessment (5%).

This unit comprises an integrated series of lectures, tutorials and practical classes which are directed towards the assessment of nutritional adequacy and the avoidance and solving of nutritional problems. Topics covered include the composition of feeds, the digestibility and efficiency of utilisation of nutrients by the animal, the requirement of the animal for nutrients and interactions between nutrients that influence health and production.

Textbooks

P. McDonald et al. Animal Nutrition 5m edn (Longman Scientific and Technical, 1995)

Others to be advised

ANSC 3002 **Animal Reproduction 3**

8 credit points

Assoc. Prof. Evans, Assoc.Prof. Maxwell

Offered: July. **Prerequisite:** ANSC 2002. **Classes:** (3 lec)/wk; 52hr prac, 13hr tut. **Assessment:** One 3hr written exam (60%), prac (20%) assignments (20%).

A comprehensive program on basic and applied male and female reproductive biology with particular emphasis on domestic animals. The unit of study includes reproductive cycles, sexual differentiation, fertilisation, development, gestation and parturition. Applied aspects include tuition on semen collection and processing, control and management of reproduction, artificial insemination, embryo transfer, pregnancy diagnosis, and induction of parturition. Tuition is given on campus in Sydney and at the University Farms, Camden and includes lectures, tutorial and practical classes.

ANSC 3003 **Animal Structure and Function 3A**

8 credit points

Dr Taylor, Dr Hemsley, Assoc. Prof. Stone, Assoc. Prof. Bryden

Offered: February. **Prerequisite:** ANSC 2002. **Classes:** 49 lee & 52hr prac/tut. **Assessment:** One 2hr exam(50%), tests (20%), 2 assignments (15% each).

This unit of study provides an integrated study of the structure and function of animals, with a detailed coverage of topics of particular importance to agricultual scientists, such as reproduction and digestion.

Textbooks
K.M. Dyce, W.O. Sack and C.J.G. Wensing Textbook of Veterinary Anatomy (W.B. Saunders, Philadelphia, 1987)
W.B. Currie (1995) Structure and Function of Domestic Animals, CRC
Handbook—a course handbook will be available for purchase. It contains details of assessment, lecture outlines, objectives, reference lists, details of practical classes, staffing, questions and diagrams

ANSC 3004 **Animal Structure and Function 3B**
8 credit points
Dr Taylor, Dr D. Evans, Dr McGreevy, Dr Collier, Assoc. Prof. W. Bryden, Associate Prof. Balnave
Offered: July. **Prerequisite:** ANSC 2002. **Classes:** 45 lee & 54hr prac/tut. **Assessment:** One 2hrexam(50%), tests [20%],prac exam (15%), assignment (15%).
This unit of study provides an integrated study of the structure and function of livestock animals, covering topics which were not covered in ASF 3 A. It will build on the concepts which were introduced and skills acquired in the ASF 3A unit of study and extend students' knowledge of the structure and function of the urinary tract, nerve, muscle, bone and skin, animal behaviour, animal welfare and avian structure and function.
Textbooks
Same as ANSC 3003Animal Structure and Function 3A
Plus: J.E. Smallwood An Introductory Study of Bovine Anatomy, Smallwood (1973)
Handbook—a course handbook will be available for purchase. It contains details of assessment, lecture outlines, objectives, reference lists, details of practical classes, staffing, questions and diagrams

ANSC 3005 **Animal Biotechnology 3**
4 credit points
A/Prof C Moran
Offered: July. **Prerequisite:** Students are expected to have knowledge of Genetics equivalent at least to Agricultural Genetics 2 (GENE 2001) and knowledge of Animal Science equivalent to Animal Science 2 (ANSC 2002). **Corequisite:** Agricultural Biotechnology (AGCH 3016). **Classes:** (1hr lect, 1 hr tut, 2 hrs of supervised reading, seminars, excursions, computer aided instruction)/wk. **Assessment:** One 2 hour exam (60%), assignments (20%), seminar (20%).
Lectures, tutorials and supervised reading and computer aided instruction cover the application of biotechnology to animal productivity, disease control, the development of new products from domestic animals and the impact of mirco-organism and plant biotechnology on animals. Included are aspects of molecular genetics, cell biology and recombinant DNA technology not included in Agricultural Biotechnology and specifically relevant to animals; regulation and monitoring of gene expression; the techniques and outcomes of genetic mapping and genomics in gene discovery, techniques and outcomes of transgenesis, including nuclear transfer, knockout mutagenesis and production of human and animal pharmaceutical proteins; gene transfer for modulating tissue function and repair of inherited and acquired defects; production and use of recombinant proteins, bioinformatics, including techniques for storing, retrieving and analysing molecular and genomic information; intellectual property protection, risks and benefits; ethical implications of biotechnology.

ANSC 4001 **Animal Production 4A**
24 credit points
Assoc. Prof. Wynn
Offered: February. **Prerequisite:** ANSC 3001, ANSC 3002, ANSC 3003.
Location: Werombi Road, Camden.
The year is devoted to advanced Animal Production and a certain degree of specialisation by medium of project work is compulsory. Students are in residence at the University Farms, Camden, for a whole year, where advanced lecture and practical courses are taken in the following subjects: poultry, genetics, and dairying. About 30 per cent of the time available is spent on project work, for which students undertake projects in the various sections of the Department of Animal Science at Camden or Sydney or other agricultural institutes outside the University.
Reference books
Agricultural Research Council The Nutrient Requirements of Farm Livestock,
—No. 1: Poultry 2nd edn (1975)
—No. 2: Ruminants (1980)
—No. 3: Pigs (1981)
G. Alexander and O.B. Williams The Pastoral Industries of Australia (Sydney U.P., 1979)
P.B. English et al. The Sow, Improving her Efficiency (Farming Press. 1977)
D.C. Falconer Introduction to Quantitative Genetics 2nd edn (Longman, 1981)
C.W. Holmes and G.F. Wilson Milk Production from Pastures (Butterworths, 1984)
D.R. Lindsay and D.I. Pearce Reproduction in Sheep (Australian Academy of Sciences, 1984)
T.R. Preston and R.A. Leng Matching Ruminant Production Systems with Available Resources in the Tropics and Sub-Tropics (Penambul Books, Armidale, 1987)
I.M. Roitt Essential Immunology 8th edn (Blackwell, 1994)
D. Sainsbury Poultry Health and Management 3rd edn (Blackwell, 1992)
F W Nicholas Introduction to Veterinary Genetics (Oxford, 1996)
D.J. Cottle Australian Sheep and Wool Handbook (Inkata Press, 1991)
R.A. Lawrie Developments in Meat Science No.s 1-2 (Applied Science Publishers, 1980, 1981)
R.A. Lawrie Developments in Meat Science No.s 3-5 (Elsevier Applied Science, 1985,1988, 1991)
A.T. Chamberlain and J.M. Wilkinson Feeding the Dairy Cows (Chalcombe Publishers, 1996)
T.B. Mepham Physiology of Lactation (Open University Press, 1987)
C. Whittemore The Science and Practice of Pig Production (Longman, 1993)
J. Hickman Horse Management (2nd edn) (Academic Press, 1987)
Other textbooks to be advised

ANSC 4002 **Animal Production 4B**
24 credit points
Offered: July. **Prerequisite:** ANSC 3001, ANSC 3002, ANSC 3003. **Corequisite:** ANSC 4001.
The following subject areas are covered: meats, pig and horse production and animal health, wool production and control of animal diseases. Stadents will complete their research project.
Textbooks
See Animal Production 4A

Asian Studies units in the Bachelor of Agricultural Economics

ASNS 2601 **Asian Studies 1A**
4 credit points
MsYasumoto
Offered: February.
Students attend classes for JPNS 1111. See unit description.

ASNS 2602 **Asian Studies 1B**
4 credit points
Ms Yasumoto
Offered: July. **Prerequisite:** ASNS 2601.
Students attend classes for either JPNS 1012 or JPNS 1112. See relevant course descriptions.

ASNS 2603 **Asian Studies 2A**
4 credit points
Ms Yasumoto
Offered: February. **Prerequisite:** ASNS 2602.
Students attend classes for either JPNS 2011 or JPNS 2111. See relevant course descriptions.

ASNS 2604 **Asian Studies 2B**
4 credit points
Ms Yasumoto
Offered: July. **Prerequisite:** ASNS 2603.

Students attend classes for either JPNS 2012 or JPNS 2112. See relevant course descriptions.

ASNS 3601 **Asian Studies 3A (Japanese)**

4 credit points
Ms Yasumoto
Offered: February. Prerequisite: ASNS 2604.
Students attend classes for either JPNS 2201 (see relevant course description) or one Japanese Studies elective unit of study (consult School of Asian Studies).

ASNS 3602 **Asian Studies 3B (Japanese)**

4 credit points
Ms Yasumoto
Offered: July. **Prerequisite:** ASNS 3601.
Students attend classes for either JPNS 2202 (see relevant course description) or one Japanese Studies elective unit of study (consult School of Asian Studies).

BIOL 1001 **Concepts in Biology**

6 credit points
Offered: February, January (short). **Assumed knowledge:** HSC 2-unit Biology course. **Prohibition:** May not be counted with BIOL 1901. **Classes:** 3 lee & 3 prac/wk. **Assessment:** One 2hr exam, assignments, classwork.
'Concepts in Biology' is an introduction to the major themes of modern biology. Starting with interactions between organisms in biological communities, we move on to the diversity of micoorganisms, plants and animals. This is followed by introductory cell biology, which particularly emphasises how cells obtain and use energy, and leads into an introduction to molecular biology through the role of DNA in protein synthesis and development. The genetics of organisms is then discussed, leading to consideration of theories of evolution and the origins of the diversity of modem organisms. It is recommended that this unit of study be taken before all other Junior units of study in Biology.
Textbooks
Knox R B et al. Biology. McGraw-Hill, 2nd ed, 2001.

BIOL 1201 **Biology - Agricultural Concepts**

4 credit points
Offered: February. **Assumed knowledge:** HSC 2 unit Biology. **Classes:** (3 lee & 3 prac)/wk. **Assessment:** One 1.5hr exam, practical test, assignments, classwork.
'Agricultural Concepts' is an introduction to the major themes of modem biology. Starting with interactions between organisms in biological communities, we move on to the diversity of microorganisms. This is followed by introductory cell biology, which particularly emphasises how cells obtain and use energy, and leads into an introduction to molecular biology through the role of DNA in protein synthesis and development.

For further information, consult "Information for Students in First Year Biology" booklet available from the Faculty of Agriculture office during the Orientation period.
Textbooks
R.B. Knox et al. Biology (McGraw-Hill, 1995)

BIOL 1202 **Biology - Agricultural Systems**

5 credit points
Offered: July. Assumed knowledge: BIOL 1201 or HSC 2 unitBiology. Classes: (3 lee & 3 prac)/wk. Assessment: One 1.5hr exam, practical test, assignments, classwork.
'Agricultural Systems' deals with the biology of all sorts of organisms, from bacteria to large plants and animals, and emphasises the ways in which they can live in a range of habitats. The importance of energy in living systems, and how elements are used and recycled in biological communities, are described. The course includes lectures and laboratory classes on the physiology of nutrition and growth, basic physiological processes of animals and plants, the ways in which organisms control and integrate their activities, and their reproduction.

For further information, consult "Information for Students in First Year Biology" booklet available from the Faculty of Agriculture office during the Orientation period.
Textbooks
R.B. Knox et al. Biology (McGraw-Hill, 1995)

BIOL 2004 **Plant Ecology and Diversity**

8 credit points
Dr Henwood, Dr McGee, Dr Marc, Dr Quinnell, Dr Wardle
Offered: February. **Qualifying:** BIOL 1001 or 1901 and one of either BIOL 1002,1902,1003,1903 or LWSC 1002. **Corequisite:** MBLG 2001 or 2101 (or MICR 2013 for BLWSc). **Prohibition:** May not be counted with BIOL 2904. **Classes:** 2 lee, 1 prac/audiovisual & 1 tut/wk. **Assessment:** One 3hr exam, 1 prac exam, one 1000w essay, classwork.

NB: The content of Biology 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2006 or 2906 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.

The unit of study provides an integrated overview of plant ecology and plant diversity. It examines how plants live in their natural environment, how their functions are affected by environmental changes and by other plants, and how the environment affects plant distribution. The rich diversity of plants living in the sea, freshwater, and on the land is explored in relation to major evolutionary advances in their form and function. Practical aspects are covered in laboratory classes, audiovisual sessions, and a field trip. Each student is required to make a plant collection. This unit of study complements BIOL 2003 and leads up to plant modules in Senior Biology.

B1OL2101 **Animals A-Theory**

4 credit points
Assoc. Prof. M B Thompson, Dr E L May.
Offered: February. Qualifying: BIOL 1001 or 1901 and one of either BIOL 1002,1902,1003,1903 or LWSC 1002. Prohibition: May not be counted with BIOL 2001 or 2901. Classes: 3 lee & 1 prac/wk. Assessment: One 3hr theory exam, 1 assignment.
NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Not a prerequisite for Senior units of study in Biology. Students taking this unit concurrently with (or following completion of) BIOL 2004 or 2904 or 2006 or 2906 must complete 16 hours of alternative work in one unit, in place of the core material common to both units. Students taking BIOL 2101 concurrently with (orfollowing completion of) BIOL 2106 must complete 16 hours of alternative work in place of the core material common to both units, and if taking these units concurrently, must elect at enrolment in which unit they wish to do the alternative work.
This unit of study provides a broad background to the diversity of animals through lectures and museum-style displays. The material is presented within the conceptual framework of evolution and the principles and use of phylogeny and classification. It is suitable for students who are majoring in other areas of biology or other subjects but who wish to acquire an introduction to animal biology. The unit of study is designed to be taken with Biology 2102 Animals B -Theory. The diversity, morphology and evolution of most invertebrate phyla are presented.

BIOL 2102 **Animals B-Theory**

4 credit points
Assoc. Prof. *M* B Thompson and Dr E L May.
Offered: July. **Qualifying:** BIOL 1001 or 1901 and one of either BIOL 1002,1902,1003,1903 or LWSC 1002. **Prohibition:** May not be counted with BIOL 2002 or 2902. **Classes:** 3 lee & 1 prac/wk. **Assessment:** One 2hr theory exam, one 1 hr prac exam, 1 assignment.

NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Not a prerequisite for Senior units of study in Biology.

This unit of study provides an introduction to the diversity of animals at the level of phylum. It provides a broad background in the diversity of animals and an introduction to phylogeny through lectures and demonstration material in laboratory classes. It focuses on vertebrates and invertebrate phyla not covered in Biology 2101 Animals A - Theory. This unit of study is de-

signed to be taken with BIOL 2101 Animals A - Theory and should preferably be taken after that unit of study. It is suitable for students who are concentrating on other areas of biology or other units of study but who wish to acquire a background in animal biology.

Biology units in the Bachelor of Agricultural Economics

Units offered by the School of Biological Sciences in the Faculty of Science. Refer to the Faculty of Science Handbook for unit descriptions.

- BIOL 1001 Concepts in Biology
- BIOL 1002 Living Systems
- BIOL 1003 Human Biology.

BIOM1001 **Biometry 1**

5 credit points
Assoc. Prof. M. O'Neill
Offered: February. Assumed knowledge: HSC 2 unit Mathematics. Classes: (2 lee & 3 tut/prac)/wk. Assessment: One 2hr practical and one 2hr theory exam (open book), class work.
This unit of study provides students with basic computing and quantitative skills for their subsequent Agricultural Science degree. It examines some useful mathematical techniques such as least squares, differentiation and integration as applied to growth curves and simple modelling, especially via the use of computers.

Practical classes will involve extensive use of personal computers. There will be a general introduction to computers, file management and software as related to agriculture. The spreadsheet package Excel and the statistical packages Minitab and Genstat will be used for mathematical analysis and for graphics presentation. Students will also be introduced to Word for work processing, and the transfer of text and graphics across Windows applications will be demonstrated.

BIOM 1002 Environmetrics 1

6 credit points
Dr P Thomson
Offered: July. Assumed knowledge: 2 unit Mathematics. Classes: (3 lee, 1 tut & 2 lab)wk. Assessment: Assignments (15%), Quizzes (10%), Practical Test (25%). one 3hr exam (50%). All open book.
This unit of study provides an introduction to computing, mathematical, and statistical techniques that are commonly used in biological and environmental sciences. After a brief introduction to computing in a Windows environment, considerable time is spent on the efficient use of spreadsheet programs for modelling of biological, environmental, and agricultural problems. Along the way, some basic mathematical techniques (function evaluation, differentiation and integration) will be introduced with an emphasis on their application to quantitative biological and environmental problems. Issues of biological variability will be considered, and some common descriptive statistical procedures will be described. The normal distribution, the cornerstone for modelling biological and environmental variability will be described, along with an introduction to scientific hypothesis testing.

BIOM 2001 Biometry 2

6 credit points
Assoc. Prof. M O'Neill
Offered: July. **Prerequisite:** BIOM 1001 or BIOM 1002. **Classes:** (3 lee, 2 prac & 1 tut)/wk. **Assessment:** One 2hr practical exam, one 3hr theory exam (open book), class work.
This unit of study extends the techniques considered in Biometry 1, and considers problems of statistical design and analysis encountered in research in the biological, agricultural and veterinary sciences. In practical classes the computer packages Minitab, Genstat and Excel are used extensively to analyse and summarise experimental data.

The first part of the unit of study covers: describing biological data and variability in statistical terms, some theory of sampling and estimation, framing biological hypotheses; theory of hypothesis testing; estimating and testing a single treatment via a t-test, and extending to tests of two or more treatment means via an F-test. The second part considers practical experimental design: randomisation and replication; the concept of experimental units; controlling variability in experimental material by pairing and blocking; applications of the analysis of variance; completely random and randomised complete block designs; Latin square designs; factorial treatment designs; missing data problems. The third component covers: linear relationships (regression, correlation) between two biological measurements; multiple linear regression model relating a biological variable to a number of predictor variables; analysis of covariance; analysis of contingency tables.
Reference book
R. Mead, R.N. Curnow and A.M. Hasted Statistical Methods in Agriculture and Experimental Biology 2nd edn (Chapman & Hall, 1993)

BIOM 2002 Environmetrics 2

4 credit points
Assoc Prof M O'Neill, Dr P Thomson
Offered: July. Prerequisite: BIOM 1002 or BIOM 1001. Classes: (2 lee 1tut &1 lab)wk. Assessment: Assignments (15%), Quizzes (10%), Practical Test (25%). one 2hr exam (50%). All open book.
This unit of study primarily develops the statistical analysis tools that were introduced in Environmetrics 1. After a brief revision of basic statistical concepts, these ideas will be extended for the comparison of two samples and multiple samples (ANOVA). The principles of experimental design will be considered (randomisation, replication), followed by some specific types of design and their analysis (completely randomised design, blocked designs). However, much environmental research involves observational studies where true replication is not feasible, and some specific forms of "design" and analysis will be considered. A range of environmental sampling types will be explored (e.g. simple and stratified sampling, sampling to locate pollutant "hot-spots". We will then briefly look at several specific issues, including techniques for detecting trends in environmental quality. We conclude with some discussion of fitting linear models to data (regression analysis) and strategies for model fitting.

BIOM 3002 Experimental Design 3

4 credit points
Assoc. Prof. M. O'Neill
Offered: February. Prerequisite: BIOM 2001 or BIOM 2002. Prohibition: BIOM 3001. Classes: (2 lee, & 3 prac)/wk. Assessment: One 2hrexam (50%), assignments (15%), computer practicals (10%), practical test (25%). All open book.
This unit is designed for students who are interested in majoring in Biometry, or for students from other disciplines with an interest in further development of their skills in experimental design and analysis. It builds on the topics introduced in Biometry 2, and aims to give students sufficient skills and confidence to complete the analysis of their own research data in Fourth Years with a high degree of competence.

After some revision of standard statistical techniques, the unit synthesises work on regression analysis and analysis of variance into the general linear model. This leads to the analysis of treatment designs which are structured; complete and incomplete factorial designs, and designs intended to model treatment response or to compare groups of treatments. Some special techniques and designs will be considered, such as repeated measures designs for the analysis of data collected from repeated observations on the same experimental unit.

BIOM 3003 Statistical Modelling 3

4 credit points
Dr P. Thomson
Offered: February. **Prerequisite:** BIOM 2001 or BIOM 2002. **Prohibition:** BIOM 3001. **Classes:** (2 lee, 3 pract)/wk. **Assessment:** One 2hr exam (50%), assignments (15%), computer practicals (10%), practical test (25%). All open book.
This unit is designed for students who are interested in majoring in Biometry, or for students from other disciplines with an interest in further development of their skills in advanced statistical modelling techniques, especially in analysis of observational data. We also consider various techniques for the analysis of non-normal data, such as dealing with counts and proportions. It

builds on the topics introduced in Biometry 2, and aims to give students sufficient skills and confidence to complete the analysis of their own research data in Fourth Years with a high degree of competence.

After some revision of standard statistical techniques, we first consider the fitting of nonlinear models, such as used in modelling biological growth. Next we consider various forms of generalised linear models for analysing non-normal data, specifically logistic regression for analysing binary and proportion data, as well as Poisson regression (loglinear modelling) for analysing count data. Other special forms of analysis are considered such as time series analysis.

BIOM 4001 Biometry 4A

24 credit points

Assoc. Prof. M. O'Neill, Dr. P. Thomson

Offered: February. **Prerequisite:** BIOM 3001or BIOM 3002 and BIOM 3003.

This unit of study trains people for careers as biometricians or statisticians. Much of the applied work encountered in Biometry 1,2, and 3 is synthesised into a more formal statistical framework. The unit will also cover some more modern techniques in use by biometricians, and provide some mathematical training necessary to pursue theoretical studies in biometry. Some of the Fourth Year units may be undertaken in the School of Mathematics and Statistics, and supplemented with extra work in Biometry.

Core units:

- Matrix Algebra and Linear Models (6 credit points)
- Biomedical Methods A (6 credit points)

plus 12 credit points chosen from:

- Research Project A (6 or 12 credit points)
- Mathematical Statistics A (6 credit points)
- or from other units of study approved by the Head of Department.

BIOM 4002 Biometry 4B

24 credit points •

Assoc. Prof. M. O'Neill, Dr. P. Thomson

Offered: July. **Corequisite:** BIOM 4001.

As in the unit of study Biometry 4A, this unit provides further specialised skills in Biometry and Statistics. Some coursework may be undertaken in the School of Mathematics, as well as in Biometry. A Research project of at least 6 credit points is to be undertaken.

Core units:

- Research project B (6 or 12 credit points)
- Biometrical Methods B (6 credit points)

plus 6 or 12 credit points chosen from

- Mathematical Statistics B (6 credit points)
- or from units of study approved by the Head of Department

CHEM 1001 Fundamentals of Chemistry 1A

6 credit points

Offered: February. **Assumed knowledge:** There is no assumed knowledge of chemistry for this unit of study, but students who have not undertaken an HSC chemistry course are strongly advised to complete a preliminary chemistry course before lectures commence. **Prohibition:** May not be counted with CHEM 1101 or 1901 or 1903. **Classes:** 3 lee & 1 tut/wk & 3hrs prac/wk for 9 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

The aim of the unit of study is to provide those students whose chemical background is weak (or non-existent) with a good grounding **in** fundamental chemical principles together with an overview of the relevance of chemistry. There is no prerequisite or assumed knowledge for entry to this unit of study.

Lectures: A series of 39 lectures, three per week throughout the semester.

Practical: A series of 9 three-hour laboratory sessions, one per week for 9 weeks of the semester.

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1002 Fundamentals of Chemistry 1B

6 credit points

Offered: July. **Prerequisite:** CHEM 1001 or equivalent. **Prohibition:** May not be counted with CHEM 1102 or 1902 or 1904. **Classes:** 3 lee & 1 tut/wk & 3hrs prac/wk for 9 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors . contributing to assessment in the unit of study.

Chemistry 1002 builds on Chemistry 1001 to provide a sound coverage of inorganic and organic chemistry.

Lectures: A series of 39 lectures, three per week throughout the semester.

Practical: A series of 9 three-hour laboratory sessions, one per week for 9 weeks of the semester.

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1101 Chemistry 1A

6 credit points

Offered: February, July, January (short). **Corequisite:** Recommended concurrent unit of study: Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. **Assumed knowledge:** HSC Mathematics 2 unit course; and the Chemistry component of the 4-unit or 3-unit HSC Science course, or 2-unit Chemistry. **Prohibition:** May not be counted with CHEM 1001 or 1901 or 1903. **Classes:** 3 lee & 1 tut/wk & 3hrs prac/wk for 9 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

Chemistry IA is built on a satisfactory prior knowledge of the chemistry component of the 4-unit or 3-unit HSC Science course or 2-unit Chemistry. A brief revision of basic concepts of the high school course is given. Chemistry IA covers chemical theory and physical chemistry.

Lectures: A series of 39 lectures, three per week throughout the semester.

Practical: A series of 9 three-hour laboratory sessions, one per week for 9 weeks of the semester.

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can.be obtained from the School.

CHEM 1102 Chemistry 1B

6 credit points

Offered: February, July, January (short). **Qualifying:** CHEM 1101 or a Distinction in CHEM 1001 or equivalent. **Corequisite:** Recommended concurrent unit of study: Preferred - MATH 1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904; otherwise - MATH 1004 and 1005 or 1013 and 1015. **Prohibition:** May not be counted with CHEM 1002 or 1902 or 1904. **Classes:** 3 lee & 1 tut/wk & 3hrs prac/wk for 9 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

Chemistry IB is built on a satisfactory prior knowledge of Chemistry IA and covers inorganic and organic chemistry. Chemistry IB is an acceptable prerequisite for entry into Intermediate Chemistry units of study.

Lectures: A series of 39 lectures, three per week throughout the semester.

Practical: A series of 9 three-hour laboratory sessions, one per week for 9 weeks of the semester.

Textbooks

A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1901 Chemistry 1A (Advanced)

6 credit points

Offered: February. **Prerequisite:** UAI of at least 92.5 and at least 75% in HSC 2-unit Chemistry or equivalent; by invitation. **Corequisite:** Recommended concurrent unit of study: Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. **Prohibition:** May not be counted with CHEM 1001 or

1101 or 1903. **Classes:** 3 lee &1 tut/wk & 3hrs prac/wk for 9 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.
Chemistry IA (Advanced) is available to students with a very good HSC performance (typically a UAI of 92.5+) as well as a very good school record in chemistry or science. Students in these categories are expected to do Chemistry IA (Advanced) rather than Chemistry IA.

The theory and practical work syllabuses for Chemistry IA and Chemistry IA (Advanced) are very similar, though the level of treatment in the latter unit of study is more advanced, presupposing a very good grounding in the subject at secondary level. Chemistry IA (Advanced) covers chemical theory and physical chemistry.

Lectures: A series of about 39 lectures, three per week throughout the semester.
Practical: A series of 9 three-hour laboratory sessions, one per week for 9 weeks of the semester.
Textbooks
A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1902 Chemistry 1B (Advanced)

6 credit points
Offered: July. **Qualifying:** CHEM 1901 or 1903 or Distinction in CHEM 1101 or equivalent; by invitation. **Corequisite:** Recommended concurrent unit of study: Preferred - MATH 1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904, otherwise - MATH 1013 and 1015 or 1004 and 1005. **Prohibition:** May not be counted with CHEM 1002 or 1102 or 1904. **Classes:** 3 lee & 1 tut/wk & 3hrs prac/wk for 9 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.
Chemistry IB (Advanced) is built on a satisfactory prior knowledge of Chemistry IA (Advanced) and covers inorganic and organic chemistry. Chemistry IB (Advanced) is an acceptable prerequisite for entry into Intermediate Chemistry units of study.

Lectures: A series of about 39 lectures, three per week throughout the semester.
Practical: A series of 9 three-hour laboratory sessions, one per week for 9 weeks of the semester.
Textbooks
A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

Commercial Law in the Bachelor of Agricultural Economics

In addition to the units of study listed after this entry, the Department of Accounting in the Faculty of Economics and Business offers the following level 3000 units. Refer to the Faculty of Economics and Business Handbook for unit descriptions.

- CLAW 3001 Australian Taxation System
- CLAW 3002 Taxation Strategies in a Business Environment.

CLAW 1001 **Commercial Transactions A**

6 credit points
Ms Kamvounias
Offered: February, July. **Classes:** (3 lectures & 1 tutorial)/week. **Assessment:** Exam, test, essays, classwork.
This unit is concerned with the fundamental elements of business law. It commences with an overview of the Australian legal system (sources of law, parliament, courts, statutory interpretation, doctrine of precedent), including an examination of those provisions in the Commonwealth Constitution relevant to business and commercial activities. Basic elements of criminal law and law of torts (in particular, negligence and negligent misstatement) are then examined. The unit continues with a detailed study of those aspects of the law of contract that underlie all commercial transactions and are the essence of commercial law (elements of a contract, terms of a contract, matters affecting the validity and enforcement of contracts, termination, remedies for a breach of contract). The unit concludes with an overview of the law of agency, property partnership and business organisations.

CLAW 1002 **Commercial Transactions B**

6 credit points
Offered: July. **Prerequisite:** CLAW 1001. **Classes:** (3 lectures & 1 tutorial)/week. **Assessment:** One 3hr exam, assignment, quiz, classwork.
Provides a background in property law including: sale of goods, implied terms, passing of property, passing of title by a non-owner, retention of title clauses, ROMPLA clauses, debt, damages, termination for breach and remedies real and personal. It also introduces laws relating to land/real property and to personal property and to intellectual property, including Copyright, Patents, Trade Marks, Passing Off, and covers current legal issues relating to the computer and internet.

CLAW 2001 **Corporations Law**

8 credit points
Mrs Mescher
Offered: February, July, January (short). **Prerequisite:** Any 4 full semester first year units of study including CLAW 1001. **Classes:** (3 lectures & 1 tutorial)/week. **Assessment:** One 3hr exam, one test, one essay classwork.
Begins with a brief comparison of business entities, especially partnership. The concept and process of incorporation are examined. Company finance, both equity and debt finance, and the maintenance of the company's share capital will be studied as well as the topics of accounts, auditors, and companies in financial difficulty. The management of companies and directors' duties will be explored as well as the rights and remedies of company shareholders. Company takeovers, prospectus provisions and securities regulation will also be discussed but studied in more depth in the elective Stock Markets and Derivatives Law.

CLAW 2002 **Bankruptcy and Insolvency**

8 credit points
Ms Wyburn
Offered: July. **Prerequisite:** CLAW 1001 and CLAW 2001. **Classes:** 3 lectures and 1 tutorial/week. **Assessment:** assignment, quiz, classwork and exam.
This unit is concerned with the law relating to the bankruptcy of individuals and corporate insolvency. In relation to bankruptcy, the unit explores the mechanisms by which formal bankruptcy may occur (creditor and debtor petitions), the role of the trustee, creditors and the bankrupt in the administration of the bankrupt estate and the property available for distribution to creditors. It goes on to examine arrangements with creditors outside formal bankruptcy (Part IX debt agreements, Part X arrangements). In the case of corporate insolvency the areas examined include receivers and other controllers, voluntary administration and deeds of company arrangement, schemes of arrangement, winding up, the liability of company officers and professional advisers, and group insolvency. Also explored is the structure of the insolvency and proposals for reform.

CLAW 2003 **Stock Markets and Derivatives Law**

8 credit points
Mrs Mescher
Offered: July. **Prerequisite:** CLAW 1001 and CLAW 2001. **Classes:** 3 lectures/wk. **Assessment:** One 3hr exam, essay and tutorials.
Begins with a study of the powers of the Australian Securities and Investment Commission with reference to recent ASIC investigations. The functions of the Australian Stock Exchange and those of securities dealers and investment advisers will be examined and the relationship between broker and client. The market offences of market manipulation and insider trading will be explored. Public funding of companies and prospectus provisions will be studied and the liability of officers and independent experts concerning the prospectus. The topic of mergers and acquisitions will examine acquisitions, relevant interests, takeover schemes and announcements, and the liability of parties to a takeover. Exchange traded futures and options and OTC derivatives will be examined.

CLAW 2005 **Trade Practices and Consumer Law**

8 credit points
Ms Kamvounias
Offered: July. **Prerequisite:** CLAW 1001. **Classes:** (3 lectures & 1 tutorial)/week. **Assessment:** Exam, essays, classwork.
This unit is primarily concerned with the provisions in the Trade Practices Act 1974 (Cwth) dealing with restrictive trade practices, unconscionable conduct, consumer protection and liability for defective goods. Topics to be studied in depth include: anti-competitive agreements, misuse of market power, exclusive dealing, resale price maintenance, mergers and acquisitions, misleading or deceptive conduct, unfair practices, product safety and product information, conditions and warranties in consumer transactions, liability of manufacturers and importers and unconscionable conduct. Comparable state legislation is also studied.

CROP 1001 **Agricultural Science 1A**

6 credit points
Dr Jacobs, Mrde Kantzow, Prof. Burgess, Assoc. Prof. Nicholas
Offered: February. **Assumed knowledge:** HSC 2 unit Chemistry or 3 unit Science. **Prohibition:** HORT1001, LWSC 1001. **Classes:** (3 lee & 3 prac)/wk. **Assessment:** One 2hr exam, prac, assignments.
This unit of study introduces the principles and practices of modern agriculture and examines the relationships between plants, animals and natural resources that make up agricultural production systems. The concepts of environmental and economic sustainability of agricultural systems will be introduced.

Topics covered include Australian fanning systems, regional agricultural industries, farming operations and plant identification.

Practical: Field practical sessions allow 'hands-on' experience with the tillage, sowing and harvesting equipment used by Australian farmers.

Reference books

V. Squires and P. Tow (eds) Dryland Farming: a Systems Approach (Sydney University Press, 1992)
C.J. Pearson et al. A Plain English Guide to Agricultural Plants (Longman Cheshire, 1993)
M.W. Denny Air and Water: The Biology and Physics of Life's Media (Princeton University Press, 1993)

CROP 1002 **Agricultural Science 1B**

6 credit points
Dr Jacobs, Dr Sharma, Dr Cook, Mr de Kantzow
Offered: July. **Corequisite:** CROP 1001. **Prohibition:** HORT 1002, LWSC 1002. **Classes:** (3 lee & 3 prac)/wk. **Assessment:** One 2 hr exam, prac, assignments.
This unit of study develops the theme of environmental sustainability of agricultural production, and examines the physical principles which underpin agricultural systems. It examines the broad ecological relationships between the plants, animals and natural resources used in agriculture, and deals with some of the problems facing agriculture in the future. In addition, the static and dynamic forces involved in agricultural structures and equipment, the behaviour and properties of water in agricultural systems and the physical aspects of weather and the changing Australian climate will be discussed.

Practical: Laboratory and field practical sessions allow 'hands-on' experience with the equipment used by Australian farmers and feature measurement of some aspects of physical principles applied to fanning operations including solar cells, the weather and tractor safety.

Reference books

V. Squires and P. Tow (eds) Dryland Farming: a Systems Approach (Sydney University Press, 1992)
C.J. Pearson et al. A Plain English Guide to Agricultural Plants (Longman Cheshire, 1993)
M.W. Denny Air and Water: The Biology and Physics of Life's Media (Princeton University Press, 1993)

CROP 2001 **Crop Science 2**

6 credit points
Offered: July. **Prerequisite:** CROP 1001 and CROP 1002, or HORT 1001 and HORT 1002, orLWSC 1001 and LWSC 1002 and BIOM 1001 or BIOM 1002. **Corequisite:** AGCH 2002. **Classes:** (3 lee & 3 prac)/wk. **Assessment:** One 3hr exam, lab work, report on field experiment.
This unit of study introduces students to the various aspects of plant physiology and its relevance to the production of crops and pastures.

The major sections of the course deal with:

(i) the physiology of seeds in the context of crop establishment;

(ii) cellular structure and anatomy of plants and their relevance to the physiology of the whole plant;

(iii) the processes of crop growth, including the capture of light, the use of water and the role of nutrients;

(iv) the physiology of ripening and quality of products.

Practical: The practical classes include laboratory, glasshouse and field activities. They are designed to complement the lecture topics and to enable students to acquire skills in the design, analysis and reporting of experiments.

CROP 2002 **Crop Protection 2**

4 credit points
Prof Burgess, Dr Summerell, Dr Park
Offered: February. **Prerequisite:** CROP 1001 and CROP 1002, or HORT 1001 and HORT 1002, or LWSC 1001 and LWSC 1002 and BIOL 1001 and BIOL 1002 or1003, or BIOL 1201 and 1202.
Corequisite: MICR 2101. **Classes:** (2 lee & 2 prac)/wk.
Assessment: One 2hr theory exam, laboratory work.
This unit of study considers the impact of diseases, pests and weeds on plant production and the various strategies for protecting plants from resulting damage. Environmental issues associated with pest control are emphasised. Topics covered include an introduction to fungal plant pathogens, crop loss assessment and economic threshold of damage, the origins of pest and disease problems and epidemiology, the major pest, weed and disease problems in Australia, the use of pesticides and resistance to them, legislative aspects and the role of quarantine, and control methods for weeds, insects and pathogens. Laboratory work includes the biology of important fungal plant pathogens, the role of chemical control measures, and case studies in integrated pest management.

Practical: Laboratory work includes the biology of important fungal plant pathogens and case studies in integrated pest management including chemical control.

CROP 3002 **Agricultural Systems & Irrigation Sci 3**

8 credit points
Dr Sutton
Offered: July. **Prohibition:** HORT2001 and CROP 3003. **Classes:** (3 lee, 2hr prac & 1 seminar)/wk. **Assessment:** One 2hr exam(60%), assignments(40%).
This unit of study introduces the principles and practice of both agricultural systems and irrigation science, with about half of the course being devoted to each. The course recognises that computer based decision aids are widespread in science and commerce. Selected examples of these will be used to illustrate the principles of efficient water use in irrigated and rainfed cropping systems and to develop efficient management strategies for them.

Irrigation farming must meet stringent environmental constraints. This unit will help you understand the scientific principles of irrigated crop water management which farm managers will need to apply to meet these constraints in a commercial environment.

Reference books

M.E. Jensen Design and Operation of Farm Irrigation Systems (ASAE, 1980)1

CROP 3003 **Agricultural Systems for Hort Science 3**

4 credit points
Dr Sutton
Offered: July. **Prohibition:** CROP 3002. **Classes:** (3 lee, 1 seminar & 2 hr prac)/wk for 1 st half of semester. **Assessment:** One 2hr exam(60%), assignments(40%).

This unit of study compliments Horticultural Science 2. It builds on the irrigation component of that unit of study and uses irrigation as one of the agricultural systems which you will learn to simulate and use as a basis for developing computer based aids to decision making.

The unit of study introduces the principles and practice of agricultural systems. It recognises that computer based decision aids are widespread in science and commerce. Selected examples of these will be used to illustrate the principles of efficient water used in irrigated and rainfed cropping systems and to develop efficient management strategies for them.

Economic History in the Bachelor of Agricultural Economics

Units offered to students in their Second and Third Years of study by the Department of Economic History in the Faculty of Economics and Business. Refer to the Faculty of Economics and Business Handbook for unit descriptions.

- ECHS 2301 Making the Modern Australian Economy
- ECHS 2302 Asia-Pacific: Growth and Change
- ECHS 2303 Economic Development of Southeast Asia
- ECHS 2305 Strategy and Growth of Big Business
- ECHS 2306 The Managerial Firm: Evolution and Attributes
- ECHS 2312 Topics in Modern European Social History
- ECHS 2313 The History of Modem European Expansion

Econometrics in the Bachelor of Agricultural Economics

In addition to the units of study listed after this entry, the Department of Econometrics in the Faculty of Economics and Business offers the following level 2000/3000 units. Refer to the Faculty of Economics and Business Handbook for unit descriptions.

- ECMT 2720 Management Science
- ECMT 3210 Statistical Modelling
- ECMT 3710 Management Science Models and Methods
- ECMT 3720 Stochastic Modelling for Management.

ECMT 1013 **Econometrics IA Stream 3**

6 credit points

Offered: February, July, January (short). Assumed knowledge: 2 unit Maths. Prohibition: MATH 1005, MATH 1905.

The first of a sequence of two units that together provide an introduction to quantitative methods used in economics and related disciplines. Topics in basic statistics include: methods available for handling, analysing and interpreting data, discussion of probability distributions, an introduction to sampling theory and simple estimation problems. Mathematics of finance is also covered. A key component is the provision of instruction and experience in the use of computers and statistical software as an aid in the analysis of data.

ECMT 1023 **Econometrics IB Stream 3**

6 credit points

Offered: July, January (short). Corequisite: ECMT 1013. Assumed knowledge: 2 unit Maths. Prohibition: MATH 1005, MATH 1905.

NB: Other than in exceptional circumstances, it is strongly recommended that students do not undertake Econometrics IB before attempting IA.

Builds on the work in Econometrics IA. Introduces hypothesis testing, simple and multiple regression analysis, time series analysis and decision theory. This statistical material is complemented by mathematical topics including matrices and partial differentiation. Again there is an important computing component that is integrated into this unit. Applications to economics, business and related disciplines in the social sciences are provided.

ECMT 2010 **Regression Modelling**

8 credit points

Offered: February. Prerequisite: ECMT 1010 and ECMT 1020. Classes: (3 lectures & 1 tutorial)/week. Assessment: One 3hr exam, tests, assignments.

Students undertaking this unit have some background in basic statistics including an introduction to regression analysis. Using this knowledge as a base, an extensive discussion of basic regression theory and some of its extensions is provided. We demonstrate how linear regression models can be applied to data to estimate relationships, to forecast, and to test hypotheses that arise in economics and business. Guidelines for using econometric techniques effectively are discussed and students are introduced to the process of model building. It is essential that the discussion of regression modelling be complemented with practice in analyzing data. An important task will be the computing component using econometric software.

ECMT 2021 **Analysis of Discrete Choice Data**

8 credit points

Offered: July. Prerequisite: ECMT 2010. Classes: (3 lectures & 1 tutorial)/week. Assessment: One 3hr exam, tests, assignments.

Data that are qualitative or discrete present particular problems for data analysts. What influences an individual to work part-time rather than full-time, or use public transport rather than drive to work, or to choose one brand of detergent over another? Why do certain firms choose particular accounting procedure over another? In these examples of modelling choice data, standard linear regression models are inappropriate. This unit considers the specification, estimation and use of statistical models that are necessary to analyze such questions. These may include the logit, probit and mutinomial logit models. Special emphasis will be placed on illustrating the appropriate application of such models using case studies and data drawn from marketing, accounting, finance and economics.

ECMT 2030 **Financial Econometrics**

8 credit points

Offered: July. Prerequisite: ECMT 2010. Classes: (3 lectures & 1 tutorial)/week. Assessment: One 3hr exam, tests, assignments.

Over the last decade econometric modelling of financial data has become an important part of the operations of merchant banks and major trading houses and a vibrant area of employment for econometricians. This unit aims to provide an introduction to some of the widely used econometric models for financial data and the procedures used to estimate them. Special emphasis will be placed upon empirical work and applied analysis of real market data. Topics covered may include the statistical characteristics of financial data, the specification, estimation and testing of asset pricing models, the analysis of high frequency financial data, and the modelling of volatility in financial returns.

ECMT 3010 **Econometric Models and Methods**

8 credit points

Offered: February. Prerequisite: ECMT 2010. Classes: (3 lectures & 1 tutorial)/week. Assessment: One 3hr exam, tests, assignments.

Methods of estimation and testing developed in association with regression analysis are extended to cover econometric models involving special aspects of behaviour and of data. In particular, motivating examples will be drawn from dynamic models, panel data and simultaneous equation models. In order to provide the statistical tools to be able to compare alternative methods of estimation and testing, both small sample and asymptotic properties will be developed and discussed.

ECMT 3020 **Applied Econometrics**

8 credit points

Offered: July. Prerequisite: ECMT 3010. Classes: (3 lectures & 1 tutorial)/week. Assessment: One 3hr exam, tests, assignments.

Econometric theory provides the techniques needed to qualify the strength and form of relationships between variables. Applied econometrics is concerned with the strategies that need to be employed to use these techniques effectively. This unit illustrates how econometric models and methods can be applied to data to solve problems that arise in economics and business. General principles for undertaking applied work will be discussed and necessary research skills developed. In particular we stress the links between econometric models and the underlying substantive knowledge or theory associated with the particular application. Topics may include error correction models, systems of consumer demand equations, and structural and vector

auto-regressive (VAR) macroeconomic models. Research papers involving empirical research will be studied and an integral component of the unit will be a major project involving a substantial piece of econometric modelling.

ECMT 3030 Forecasting for Economics and Business

8 credit points
Offered: July. **Prerequisite:** ECMT 2010. **Classes:** (3 lectures & 1 tutorial)/week. **Assessment:** One 3hr exam, tests, assignments.
The need to forecast or predict future values of economic time series arises frequently in many branches of applied economic and commercial work. It is, moreover, a topic which lends itself naturally to econometric and statistical treatment. The specific feature which distinguishes time series from other data is that the order in which the sample is recorded is of relevance. As a result of this, a substantial body of statistical methodology has developed. This unit is intended to provide a first course in methods of time series analysis and forecasting. The material covered will be primarily time domain methods designed for a single series and will include the building of linear time series models, the theory and practice of univariate forecasting and the use of regression methods for forecasting. Throughout the unit a balance will be maintained between theory and practical application.

Economics in the Bachelor of Agricultural Economics

In addition to the units of study listed after this entry, the Department of Economics in the Faculty of Economics and Business offers the following level 2000/3000 units. Refer to the Faculty of Economics and Business Handbook for unit descriptions.

- ECON 2901 Intermediate Microeconomics Honours
- ECON 2902 Intermediate Macroeconomics Honours
- ECON 3001 Capital and Growth
- ECON 3002 Development Economics
- ECON 3003 Hierarchies, Incentives and Firm Structure
- ECON 3004 History of Economic Thought
- ECON 3005 Industrial Organization
- ECON 3006 International Trade
- ECON 3007 International Macroeconomics
- ECON 3008 Labour Economics
- ECON 3009 Markets, Regulation and Government Policy
- ECON 3010 Monetary Economics
- ECON 3011 Public Finance
- ECON 3012 Strategic Behaviour.

ECON 1001 Introductory Microeconomics

6 credit points
Offered: February, January (short). **Assumed knowledge:** HSC 2 unit Mathematics.
Introductory Microeconomics addresses the economic decisions of individual firms and households and how these interact in markets. It is a compulsory core course for the Bachelor of Economics degree (BEc) and for the Bachelor of Commerce degree, and an alternative core course for the Bachelor of Economics (Social Science).

Economic issues are pervasive in contemporary Australian society. Introductory Microeconomics introduces students to the language and analytical framework adopted in Economics for the examination of social phenomena and public policy issues. Whatever one's career intentions, coming to grips with economic ideas is essential for understanding society, business and government. Students are given a comprehensive introduction to these ideas and are prepared for the advanced study of microeconomics in subsequent years.

ECON 1002 Introductory Macroeconomics

6 credit points
Offered: July, January (short). **Assumed knowledge:** HSC 2 unit Mathematics.
Introductory Macroeconomics addresses the analysis of the level of employment and economic activity in the economy as a whole. It is a compulsory core unit for the Bachelor of Economics degree (BEc) and for the Bachelor of Commerce degree and an alternative core course for the Bachelor of Economics (Social Science).

Introductory Macroeconomics examines the main factors that determine the overall levels of production and employment in the economy, including the influence of government policy and international trade. This analysis enables an exploration of money, interest rates and financial markets, and a deeper examination of inflation, unemployment and economic policy.

ECON 2001 Intermediate Microeconomics

8 credit points
Offered: February, January (short). **Prerequisite: ECON 1**001**.** **Corequisite:** ECMT 1010.
NB: Certain combinations of Maths/Stats may substitute for Econometrics - consult Faculty.
The aim of Intermediate Microeconomics is the development of theoretical and applied skills in economics. It covers applications and extensions of the theory of consumer choice, firm behaviour and market structure. Emphasis is given to the economics of information and choice under uncertainty; industry structures other than monopoly and perfect competition; markets for factors of production; general equilibrium and economic efficiency; market failure and the role of government. This unit provides a basis for the more specialised options that comprise third year economics.

ECON 2002 Intermediate Macroeconomics

8 credit points
Offered: July, January (short). **Prerequisite:** ECON 1002. **Corequisite:** ECMT 1020.
NB: Certain combinations of Maths/Stats may substitute for Econometrics - consult Faculty.
This unit of study develops models of the goods, money and labour markets, examines issues in macroeconomic policy. Macroeconomic relationships, covering consumption, investment, money and employment, are explored in detail. Macro-dynamic relationships, especially those linking inflation and unemployment, are also considered. Exchange rates and open economy macroeconomics are also addressed. In the last part of the course, topics include the determinants and theories of economic growth, productivity and technology, the dynamics of the business cycle, counter-cyclical policy and the relationship between micro and macro policy in the context of recent Australian experience.

ENTO1001 Agricultural Entomology 1

4 credit points
Assoc. Prof. Rose
Offered: July. **Classes:** (2 lee & 2 prac)/wk. **Assessment:** One 2hr exam, classwork, insect collection.
This unit of study aims to give an introduction to insects and related animals and their importance to agriculture.

Topics covered include morphology, classification, physiology, ecology and behaviour, and principles of insect pest control. **Practical:** Practical classes deal briefly with insect morphology and classification and some information on economic pests of agriculture.

ENTO 4001 Agricultural Entomology 4A

24 credit points
Offered: February. **Prerequisite:** ENT01001. **Corequisite:** ENTO 4002.
A full-year specialisation which comprises the following units of study:

Insect Taxonomy: Theory of systematics and techniques used by taxonomists are discussed. Classification to family level of some orders is included in the practical course.

Ecology: This unit of study is given by the School of Biological Sciences.

Reading: A list covers areas in entomology that are not covered in other sections of the unit of study and allows students to concentrate on areas of interest.

Project: Students undertake research projects throughout the year under supervision by staff members.

Insect Collection: Students are required to make a small but representative collection of insects.

Textbooks

ID. Naumann (ed.) Systematic and Applied Entomology (Melbourne U.P., 1994)

ENTO 4002 **Agricultural Entomology 4B**

24 credit points

Offered: July. **Prerequisite:** ENT01001. **Corequisite:** ENTO 4001.

See ENTO 4001 Agricultural Entomology 4A

Textbooks

See Agricultural Entomology 4A

ENV11001 **Global Geology**

6 credit points

Offered: February. **Classes:** 3 lee & prac/tut/wk. Assessment: One 2hr exam, class work.

The unit of study serves as an introduction to environmental geology by examining global geological processes and their controls on the human environment. The unit of study explores the origin of the Earth within the developing Solar System and traces the evolution of the Earth's hydrosphere, atmosphere and biosphere through geological time. Other topics include plate tectonics, and the influence of volcanic activity, earthquakes and other geological hazards on human occupation of the planet. The unit of study includes an examination of minerals and rocks as an introduction to the study of the Earth's mineral and energy resources.

Students considering enrolling in this unit of study should study the pamphlet on the Junior unit of study in Geology, obtainable from the Enquiry Office in the Edgeworth David Building. It gives details of unit of study content, text and reference books, staffing and other relevant matters.

ENV11002 **Geomorphic Environments and Change**

6 credit points

Offered: July. **Classes:** 3 lee & prac/tut/wk. Assessment: One 2hr exam, class work.

This unit of study completes the introduction to environmental earth sciences by examining geographical scales of environmental concern, such as catchments, river basins, hydrology and land-use. The unit then progresses on to the basic microbiological aspects of the environment and how we can use these to our benefit. Students will begin to learn how to integrate information from related disciplines to understand relationships between the sciences and the environment and to produce solutions to environmental problems. This will be a continuing theme drroughout the Environmental Science program.

ENVI 3001 **Environmental Law and Planning**

12 credit points

Offered: February. **Prerequisite:** ENVI 2001 and 2002. **Classes:** 8 lec/wk; 3 field-units. **Assessment:** Continual assessment throughout the semester by essay, report and prac assignments.

NB: This unit of study is only available to students enrolled in the BSc(Environmental).

ENVI 3001 covers topics and issues in environmental ediics, law, resource economics, planning, regulation and management for the built and natural environments, and energy production and alternate processes. This is an intensive unit of study that examines issues not normally considered "environmental" but which impact to a large degree on how we interact with our environment.

ENVI 3002 **Environmental Assessment**

12 credit points

Offered: July. **Prerequisite:** ENVI 2001 and 2002. **Classes:** 8 lee & 4 prac/tut/wk. **Assessment:** Continual assessment throughout the semester by essay, report and prac assignments.

NB: This unit of study is only available to students enrolled in the BSc(Environmental).

ENVI 3002 covers all issues concerning environmental impact assessment, including topics in conservation, risk assessment and ecotoxicology, as well as providing an examination of the logical structure of environmental sampling. The latter introduces the theory of sampling design for measurements at different scales of biological systems, statistical analysis of data and the interpretation of magnitude and scale of environmental disturbances, with topics including the nature of variables, univariate and multivariate measures, correlation of environmental variables and interpretation of data.

ENVI 4803 **Environmental Law***

4 credit points

Offered: February.

This is an overview unit of study which looks at a number of environmental issues at various levels of analysis, policy making, implementation of policy and dispute resolution. It will provide a broad background of the political and economic issues as they related to the legal issues involved plus a general coverage of all laws in Australia pertaining to environmental matters. This unit of study involves lecture material and an essay on policy issues.

FARM 4001 **Farming Systems 4A$**

24 credit points

Mr de Kantzow

Offered: February (not in 2001). **Prerequisite:** AGEC 2003 or AGEC 3001. **Corequisite:** AGRO 3001.

This is an interdisciplinary program offered jointly by the Department of Agricultural Economics and the Department of Crop Sciences. It is designed for students with a general training in agricultural science who seek to understand farming systems and dieir managerial aspects within the wider agribusiness environment. Students will complete a minimum of 48 credit points including a project.

Core units of study:

Agronomy 3 (if not already completed) (8 credit points)
Crop Agronomy & Sustainable Management (8 credit points)
Crop and Pasture Physiology (4 credit points)
Pasture Agronomy (4 credit points)
Either
Introductory Land and Water Economics (4 credit points)
or
Natural Resource Economics 4 (8 credit points)
Production Economics 2 (if not already completed) (8 credit points)
Project (8 credit points)
plus credit points from the following units:
Accounting IA and IB (12 credit points), or
Financial Accounting Concepts and Management Accounting Concepts (12 credit points)
Advanced Soil Chemistry (6 credit points)
Agribusiness Management 3 (8 credit points)
Agricultural and Resource Policy 3 (8 credit points)
Agricultural Systems and Irrigation Science 3 (8 credit points)
Applied International Trade 4 (8 credit points)
Applied Marketing 4 (8 credit points)
Plant Disease 3 (8 credit points)
Soil Science 3 (8 credit points)
and other units of study approved by the Head of Department concerned, up to 8 credit points.

Project (8 credit points)

The project will involve an evaluation of an agribusiness/farming systems/farm management proposal and results in a 10,000-word report. Students will be assisted in the selection of a suitable project.

To pass the year, students must perform satisfactorily in the project, in subjects of an economics nature and in subjects of a science nature.

Introductory Land and Water Economics

4 credit points. Coordinator: Dr Godden. Offered: March. Assessment: one 1.5hrexam, assignments.

An overview is provided of economic analysis of natural resources in the context of making choices about resource use. Initial lectures sketch the need for economic principles in analysing resource use, and develop basic economic principles for evaluating production and consumption of commodities. Property rights and time are emphasised as key areas where basic economic principles require modifying in a resources context: these principles are used to develop tools of economic analysis

in benefit-cost analysis; economics of pollution; and optimising use of natural resources over time. Six particular natural resource problems are examined: agricultural and urban water supply; blue-green algae; intractable waste; sustainable development; population and food supply; and the enhanced greenhouse effect.

Unit of study and component descriptions

For those of an economic nature, see under Agricultural Economics. For those of a scientific nature, see under Agronomy 4, Soil Science 4, or the specific unit of study or component stated above.

FARM 4002 **Farming Systems 4B+**

24 credit points

Offered: July (not in 2001). **Prerequisite:** AGEC 2003 or AGEC 3001. **Corequisite:** FARM 4001, AGRO 3001.

See FARM 4001 Farming Systems 4A.

Finance in the Bachelor of Agricultural Economics

Units offered by the Department of Finance in the Faculty of Economics and Business follow this entry. BAgrEc students are hot normally permitted to enrol in Honours units.

FINC 2001 **Corporate Finance I**

8 credit points

Offered: February, January (short). **Prerequisite:** ECON 1001 and ECON 1002 and ECMT 1010 and ECMT 1020 and ACCT 1001 (or ACCT1003). **Classes:** 2hrs lectures, 1 hr workshop & 1 hr tutorial/ week. **Assessment:** One 3hr exam, assignments, mid semester test.

NB: Study in Finance commences in second year.

Provides an introduction to corporate finance, including investment decision-making. The first part deals with the analytical techniques necessary to make investment decisions, both when cash flows are known and when they are uncertain. The second part deals with the corporation and the Australian capital market, the raising of capital, including equity versus debt, and allocating capital, including dividends, internal investments and takeovers. As far as possible, the unit will attempt to link theory to practical applications via examples, exercises and assignments.

FINC 2002 **Corporate Finance II**

8 credit points

Offered: July, January (short). **Prerequisite:** As for FINC 2001. **Corequisite:** FINC 2001. **Classes:** 2hrs lectures, 1 hr workshop & 1 hr tutorial/week. **Assessment:** One 3hr exam, assignments, mid semester test.

Builds on FINC 2001: Corporate Finance I, but is more applied in that it is concerned with the actual workings of financial markets. It examines the operation of financial markets from both a theoretical and practical perspective, concentrating mainly but not exclusively on Australian financial markets. The unit deals with the economic role of capital markets and theories of capital market behaviour. The operations of equity and derivative markets in Australia, including options and futures, are examined along with foreign exchange and debt markets. A new and important area of study known as 'market microstructure' is introduced and a number of issues in corporate governance and takeovers are examined.

FINC 2004 **Introductory Mathematical Finance**

8 credit points

Offered: July. **Prerequisite:** ECON 1001 and ECON 1002 and ECMT 1010 and ECMT 1020 and ACCT 1001 (or ACCT 1003). **Corequisite:** FINC 2001. **Assumed knowledge:** It is recommended that students reach the level of HSC 3 Unit Mathematics prior to undertaking the unit. It is also recommended but not required that students either undertake the Maths/Stats major or avail themselves of units offered in Mathematics and Statistics. Other recommended units providing a useful background include ECON 2001, ECON 2901 and ECON 2903. **Classes:** (2 hrs lectures + 1 tutorial)/week plus additional workshops as required. **Assessment:** One 3hr exam, assignments.

The principle objective of this unit is to introduce students to the basic elements of the rapidly burgeoning field of Mathematical Finance. Students are exposed to key areas in the modern theory of finance and corporate financial policy with specific emphasis on their development and treatment from rigorous mathematical and statistical foundations. The unit will provide some of the necessary maths background so that the subject is reasonably self-contained. Topics that are introduced from a more mathematical perspective include principles of modern financial valuation and analysis; asset pricing theory and market efficiency; theory of portfolio selection and management; and measurement and management of financial risk.

FINC 3001 **International Financial Management**

8 credit points

Offered: July, January (short). Prerequisite: FINC 2001 and (FINC 2002 or FINC 2004) and ECON 2001 and ECON 2002 or ECON 2901 and ECON 2902. Classes: (2 hrs lectures + 1 tutorial)/week. Assessment: Two, 2 hr exams; project; assignments.

Markets are increasingly globalised. There are very few businesses or industries that are not required to deal with issues such as foreign currency, foreign competition and direct investment. This unit of study is designed to allow students to extend their understanding of basic principles in finance to an international environment. Globalisation of markets introduces risks but also opens up profitable opportunities.

Topics covered include foreign currency valuation and markets, international parities conditions, measuring and managing foreign exposure, international portfolio management, capital budgeting and foreign direct investment, international tax management and international financing strategy.

FINC 3002 **Derivative Securities**

8 credit points

Offered: February, January (short). Prerequisite: FINC 2001 and (FINC 2002 or FINC 2004), and ECON 2001 and ECON 2002 or ECON 2901 and ECON 2902. Classes: (2 hrs lectures and 1 tutorial)/week; one workshop session (not every week). Assessment: One report/sem, exams, assignment, tests.

Options, futures and swaps are derivatives of underlying securities such as equities and bonds. These relatively new and rapidly growing types of securities are increasingly used to manage risk exposure and as a relatively low-cost-way of taking a position in a security or portfolio. They are also being used as part of senior management compensation as a way of attempting to align the interests of shareholders with that of management.

The unit is designed to provide an introduction to this important area of finance without requiring on the part of students a high level of mathematical sophistication. Students will gain exposure to the operations of the Sydney Futures Exchange (SFE) and the Options Exchange and some may even choose to enhance their learning experience by investing small sums on these exchanges.

FI N C 3003 **Corporate Control**

8 credit points

Offered: February. Prerequisite: FINC 2001 and (FINC 2002 or FINC 2004) and ECON 2001 and ECON 2002 or ECON 2901 and ECON 2902. Classes: (2 hrs lectures and 1 tutorial)/week plus additional workshops as required. Assessment: Major practical assignment, several small exercises, one 3 hr exam.

The finance sector requires many professionals to advise and assist in the process of new company formation and listings on the stock exchange, acquisitions, mergers, restructurings, issuance of new debt and equity, board structure and composition including outside directors, structuring of executive compensation packages and the like. These activities generally fall under the rubric of corporate control, or in more modern academic parlance, "corporate governance".

This unit will focus on how corporations are formed, how ownership and control is allocated, and how it changes hands through takeovers, bankruptcies, and reorganisations. The following are provided as examples of the sorts of topics to be covered: how the internal labour market and "pay for performance" within firms impinges on the firm's capital structure; the role and nature of takeover bids and corporate restructuring; the ques-

tionable condemnation of "management entrenchment"; the packaging of cashflow and control rights; the "dual class" share controversy and "super-voting" shares; leveraged buyouts; employee ownership and profit-sharing; the choice between debt, equity, and more complex securities; corporate governance including boards, active investors and regulators; and Anglo-American style firms versus the "main bank" systems of Japan and Germany.

Textbooks

R.A.G. Monks and N.Minow, "Corporate Governance for the 21st Century: Watching the Watchers" (Blackwell Business, 1996)

FINC 3004 **Trading and Dealing in Security Markets**

8 credit points

Offered: July. **Prerequisite:** FINC 2001 and (FINC 2002 or FINC 2004) andECON 2001 and ECON 2002 or ECON 2901 and ECON 2902. **Classes:** (2 hrs lectures + 1 tutorial)/week. **Assessment:** One 3hr exam, assignments.

The purpose of this unit is to provide students with a detailed working knowledge of Australia's exchange based securities markets. The emphasis is on understanding:

- patterns of trading behaviour within and between markets;
- the three main features of the markets, namely transaction costs, liquidity and volatility;
- the roles played by:
  (i) institutional versus private investors;
  (ii) brokers and market-makers;
  (iii) principal and agency trading;
  (iv) informational technology;
  (v) regulation.

The broad aim of the unit is to provide students with both a practical appreciation of the institutional structure of exchange-based securities markets and a thorough research grounding in the techniques which lead to this understanding, namely the relatively new discipline known as "security market microstructure".

As an aid to learning the unit is currently being developed to include UniSMARTS, a market surveillance tool used by several exchanges.

FINC 3005 **Cases in Managerial Finance**

8 credit points

Offered: July. **Prerequisite:** FINC 2001 and (FINC 2002 or FINC 2004); and ECON 2001 and ECON 2002 or ECON 2901 and ECON 2902. **Classes:** (2 hrs lectures and 1 tutorial)/week, one workshop session (not every week). **Assessment:** One 3hr exam, assignment, tests.

This is a capstone unit of study which focuses on the application of financial principles and methods to develop up-to-date problem solving techniques using an applied case study approach. The unit of study pulls together important contributions from earlier units in the finance major. Cases include issues in capital budgeting and cost of capital, financial decision making, financial statement analysis, international financial management, dividend policy and mergers and acquisitions, and investments. In addition to lectures, the unit is based around computer lab workshops and a competitive computer simulation game. There is a strong emphasis on working in teams to solve common problems.

FINC 3007 **Investments and Portfolio Management**

8 credit points

Offered: February. Prerequisite: FINC 2001 & (FINC 2002 or FINC 2004) and ECON 2001 and ECON 2002 or ECON 2901 and ECON 2902. Classes: (2hrs lectures + 1 tutorial)/week. Assessment: One mid-term exam (two hours), one final exam (two hours), one project.

This course is designed to provide a comprehensive analytical approach to the modern theory of Investments. Topics covered include the valuation of bonds and stocks, mean-variance analysis, Markowitz type portfolio analysis, duration and convexity analysis, term structure of interest rates, option pricing, portfolio insurance, performance evaluation, and forecasting. Basic statistics and probability concepts will be reviewed at the beginning to ensure that all students have adequate understanding. Although there will be a definite attempt to stress the analytical aspects of Investments theory, there will be also an equal amount of emphasis on the intuitive as well as practical aspects of the subject.

GENE 2001 **Agricultural Genetics 2**

6 credit points

Dr Sharp, DrDarvey, Dr Stoddard, Assoc. Prof. Moran, Assoc. Prof. Nicholas

Offered: July. Prerequisite: BIOL 1201 and BIOL 1202 or BIOL 1001 and BIOL 1002, BIOM 1001. Classes: (3 lec, 1 tut & 2 prac)/wk. Assessment: One 3hr exam, tests, assignments.

This lecture and practical unit of study provides an introduction to the genetics and breeding of plants and animals. It provides an understanding for parallel and following courses. Lectures cover the basics of gene transmission and interaction, cytogenetics, molecular genetics, population and quantitative genetics, as well as the more applied aspects of plant and animal breeding and biotechnology. Practicals emphasise, with agricultural examples, the procedures of genetic and cytogenetic analysis, and the use of computers in simulation procedures in population genetics, quantitative inheritance and selection programs, and provide exposure to current plant and animal breeding and biotechnology.

GENE 4001 **Agricultural Genetics 4A**

24 credit points

Dr Darvey, Dr Sharp, Assoc. Prof. Moran, Assoc. Prof. Nicholas

Offered: February. **Prerequisite:** BIOM 2001, GENE 2001.

The coursework is designed for students wishing to concentrate on those areas of genetics or breeding which are seen as most relevant to their present interests and career prospects. Students should consult with the relevant departments in determining course combinations. Units of study at Cobbitty may be run as intensives either during or between semesters.

(a) Cytogenetics (Cobbitty) (6 credit points). Lectures in cytology and cytogenetics, with special emphasis on cereals and the application of chromosome engineering to plant breeding. The laboratory unit includes routine cytological procedures and tissue culture technology.

(b) Plant Breeding (Cobbitty) (6 credit points). Lectures and practical work devoted to the theory, philosophy and practice of plant breeding, screening techniques, conservation of genetic variability, breeding for disease resistance, the use of tissue culture in breeding, with examples from both field and horticultural crops.

(c) Population Genetics and Animal Improvement (Camden) (8 credit points). A series of lectures and practical periods, dealing with population genetics, quantitative inheritance and animal breeding given by the Department of Animal Science.

(d) Prokaryote and Eukaroyote Molecular Genetics (Main Campus) (12 credit points). Lectures and laboratory classes given in the School of Biological Sciences.

(e) Molecular Genetics and Breeding (Cobbitty) (6 credit points). Lectures and laboratory work covering the structure and functions of plant genomes and genes, the technology and results of DNA transformation, and the analysis of agronomic traits by both molecular techniques and by genetic mapping using molecular and other genetic markers.

(f) Animal Genetics (Main Campus) (4 credit points). A series of lectures covering those aspects of genetics that are relevant to animals, with particular emphasis on the genetic basis of animal disease. Topics include biochemical disorders, chromosomal abnormalities, non-Mendelian disorders, immunogenetics, pharmacogenetics, genetic variation in pests, parasites and pathogens, and genetic and environmental control of disease.

(g) Project (compulsory) (6-18 credit points).

(h) Any other 6-credit point unit with the approval of the Head of Department.

GENE 4002 **Agricultural Genetics 4B**

24 credit points

Offered: July. **Prerequisite:** BIOM 2001, GENE 2001. **Corequisite:** GENE 4001.

See GENE 4001 Agricultural Genetics 4A.

GEOG 2001 Processes in Geomorphology

8 credit points
Associate Professor D Dragovich
Offered: February. **Prerequisite:** 36 credit points of Junior units of study, including GEOG 1001 or ENV11001 or 1002. Students enrolled in the Bachelor of Resource Economics should have 36 credit points from Junior units of study in Biology, Chemistry and Mathematics. **Classes:** 3 lee & 5 prac or field/wk. **Assessment:** One 2hr exam or 1500w essay or prac papers.

NB: A candidate who has completed 36 Junior credit points including 12 Junior credit points of Mathematics and 12 Junior credit points of Physics or Chemistry and who has not taken Geography 1001 or 1002 may apply to the department for permission to enrol in any Intermediate Geography unit of study. The Department of Geography is not normally prepared to support such applications to enrol in Intermediate Geography units of study from persons other than those who, in their first year of studies, have completed six Junior units of study above the concessional pass grade and have not subsequently failed in any Intermediate unit of study.

Geomorphology stream: This unit of study is concerned with the geomorphology of global environments, as mega-landforms and the processes that shape them. The major focus is on continental-scale landforms and the long term processes which shape the physical platform which is the home, workplace and exploitation surface of humankind.

GEOG 2002 Fluvial and Coastal Geography

8 credit points
Dr P Cowell & Mr G Doyle
Offered: July. **Prerequisite:** 36 credit points of Junior units of study, including GEOG 1001 or ENVI 1001 or 1002. Students enrolled in the Bachelor of Resource Economics should have 36 credit points from Junior units of study in Biology, Chemistry and Mathematics. **Prohibition:** May not be counted with GEOG 2302 or MARS 2002. **Classes:** 3 lee & 5 prac or field/wk. **Assessment:** One 2hr exam, 1500w essay or prac reports.
NB: Other Information: As for GEOG 2001.
Physical Geography stream: This unit of study focuses not on global, but meso- and micro-scales on two of the major morphostratigraphic systems, namely fluvial and coastal geomorphology. Both provide introductory analyses of rivers and coasts, so fundamental to understanding the physical environments which affect the sustainability of these regions.

GEOG 2302 Fluvial Geomorphology

6 credit points
Dr Gavin Doyle.
Offered: July. **Prerequisite:** GEOG 2001 or 36 credit points of Junior units of study including GEOG 1001 or ENVI 1001 or 1002 or GEOG 2001. Students in the Bachelor of Resource Economics should have 36 credit points of Junior units of study in Biology, Chemistry and Mathematics. **Prohibition:** May not be counted with GEOG 2002. **Classes:** 3 lee, 3 prac & 1 tut/wk. **Assessment:** One 3hr theory exam, 1 essay, 1 project.

This unit will provide an introduction to fluvial processes and morphology, with particular reference to the Australian environment. The unit will take a holistic view of the fluvial system, emphasising that stream characteristics are an outcome of interrelated variables operating at different scales within the catchment. It will include a description of catchment characteristics; water and sediment delivery, conveyance and influence on channel morphology; floods and floodplains; natural and anthropogenic channel change; groundwater issues; and estuarine sedimentation.

Geography units in the Bachelor of Agricultural Economics

Geography is a varied and versatile subject covering a broad spectrum of knowledge. It was once concerned principally with the description of the earth, but modern geography now embraces society's relationship with the earth within a scientific and highly-structured framework. Currently there are three main elements of Geography actively pursued by the Division. Aspects of Physical Geography deal with phenomena such as landforms, plants and soil as elements of physical landscapes. Human geography consists mainly of social and economic geography and is concerned with such features as rural and urban settlements, cultural influences and way of life. Economic geography includes the study of agriculture, industry, transport, marketing and resources. Environmental geography is concerned with the human/land relationships. This was a traditional theme used as early as in Griffith Taylor's time in the 1920s. It has come to the forefront with contemporary concerns for the environment. However, these three divisions are arbitrary, and some courses involve integration of various aspects of them all.

As theoretical understanding and quantitative precision have advanced, geography has developed as a useful discipline for analysing and proposing solutions to practical problems. Geographers have proved their value in such fields as local government, town and regional planning, decentralisation and environmental management.

Conducted field excursions

Students in Junior courses are required to attend two one-day excursions to localities within about 150 km of Sydney. In Intermediate and Senior courses, students are required to take part in long excursions, of about a week's duration, based on a centre remote from Sydney. However, in physical and environmental geography, there may be the chance of substituting for this remote excursion by having a number of days each semester in the field (up to five days each semester). Those who wish to apply for an interest-free loan to enable them to meet the costs of excursions should consult the SRC and the financial assistance section of the central administration.

Excursion work will be assessed by written assignment and/or examination. Exemption from excursions will only be granted under exceptional circumstances. Requests for exemption must be submitted in writing to the Head of Division.

Unit descriptions can be found in the Faculty of Science Handbook.

Geography handbook

Further details of unit descriptions, departmental activities, excursions, and other relevant material are contained in the Geography Handbook available from the Enquiry Office in the Institute Building.

Geography Junior units in the Bachelor of Agricultural Economics

The Division offers two junior units of study:
- GEOG 1001 Biophysical Environments
- GEOG 1002 Human Environments.

Geography Intermediate units in the Bachelor of Agricultural Economics

The Division offers six Intermediate units of study in 3 streams.

Each unit consists of three lectures and the equivalent of five hours assigned work (which may comprise tutorials, practicals, individual course work and/or fieldwork) weekly. All students are required to attend compulsory one to three day excursions associated with each unit of study which are held within the semester. Some units hold two or three such excursions.

Geomorphology
- GEOG 2001 Processes in Geomorphology
- GEOG 2002 Fluvial and Coastal Geography

Environmental
- GEOG 2101 Environmental Change and Human Response
- GEOG 2102 Environmental Management

Human
- GEOG 2201 Cultural and Economic Geography
- GEOG 2202Urban and Political Geography.

Geography Senior units in the Bachelor of Agricultural Economics

The Division offers six senior units of study in 3 streams. Each unit of study consists of three lectures and the equivalent of

nine hours assigned work (which may comprise tutorials, practicals, individual course work and/or fieldwork) weekly. All students are required to attend compulsory one to three day field excursions associated with each unit of study which are held within the semester. Some units hold two or three such excursions.

- GEOG 3001 Coastal Environments and Dynamics
- GEOG 3002 Environmental Geomorphology
- GEOG 3101 Catchment Management
- GEOG 3102 Coastal Management and GIS
- GEOG 3201 Asia Pacific Development
- GEOG 3202 Sustainable Cities and Regional Restructuring.

Government in the Bachelor of Agricultural Economics

In addition to the Level 1000 units which follow this entry, the Department of Government in the Faculty of Economics and Business also offers the following units of study to students in their Second and Third Years of study. Refer to the Faculty of Economics and Business Handbook for unit descriptions.

- GOVT 2091 Government 2 Honours
- GOVT 2104 Political Party System in Australia
- GOVT 2107 Researching Australian Political Behaviour
- GOVT 2201 Economic Relations in International Politics
- GOVT 2205 International Security in the 21st Century
- GOVT 2208 Environmental Politics in the Asia-Pacific
- GOVT 2301 Social Change and Politics
- GOVT 2306 Gender and the State
- GOVT 2402 Government and Politics of Modern China
- GOVT 2404 European Politics and Transition
- GOVT 2405 American Politics and Foreign Policy
- GOVT 2406 Reform, Revolution and Post-Communism
- GOVT 2410 States and Markets in the International System
- GOVT 2411 Capitalism and Democracy in East Asia
- GOVT 2502 Policy Analysis
- GOVT 2503 Citizenship, Work and Welfare
- GOVT 2504 Government and Business
- GOVT 2507 Public Sector Management
- GOVT 2606 Modernity and Politics
- GOVT 2607 Literature and Politics.

GOVT 1101 Australian Politics

6 credit points

Offered: February, July, January (short). **Classes:** (2 lectures & 1 tutorial)/week.

This unit aims to introduce students to debates about the nature and limits of Australian democracy, to the major institutions of Australian politics, and to the distribution of power in Australian society. Major institutions and forces such as parliament, executive government, the federal system, political parties and the media will be examined as arenas of power, conflict and consensus. Who rules? How? Which groups are excluded?

GOVT 1202 World Politics

6 credit points

Offered: February, July. Classes: (2 lectures & 1 tutorial)/week.

Introduces the student to the major concepts and approaches of international relations. It will take the student through the traditional theories of international relations, and go on to look at the most recent developments within the discipline. It may look at the uses and problems of the comparative method. Themes examined include, the question of order and conflict in world politics, first-third world economic relations and feminist and critical approaches to traditional international relations theory. Students will be equiped with a broad theoretical understanding of international relations as well as an insight into other disciplines, notably politics in general, sociology and economics.

GOVT 1207 Global Politics and the Environment*

6 credit points

Offered: July. Classes: (2 lectures & 1 tutorial)/week.

Global environmental problems are often regarded as part of a 'new agenda' in international relations, potentially requiring a re-evaluation of traditional notions of international politics such as national sovereignty and security. This unit will examine the adequacy of more traditional notions of international politics in the light of the potential challenges posed by global environmental problems. The aims of the unit are to introduce students to the basic concepts employed in the study of international politics, the political nature of global environmental problems and the connection between these problems and processes of "globalisation" and "modernisation". The unit covers issues such as the nature of the international politics, the influence of non-state actors (e.g. environmental movements, international environment agencies), the link between scientific knowledge and political action, international equity and environmental problems (the North/South debate), etc.

GOVT 1406 Change in Modern World Politics*

6 credit points

Offered: February. Classes: (2 lectures & 1 tutorial)/week.

The last two decades of the twentieth century have seen a wave of democratisation sweep the world. In Latin America, Southern and Eastern Europe, East Asia and Southern Africa, new regimes have replaced authoritarian governments and sought to build democratic systems. But such changes of regime have not been a feature only of this period; regime change has been common throughout history. This unit will focus upon the politics of regime change. It will analyse the ways in which changes of regime occur, including coup d'etat, revolution, and the more gradual process of evolution. It will study the types of actors involved and the social and economic forces which assist (or hinder) this process. It will also look at the conditions facilitating the consolidation of new regimes. Examples will be taken from various parts of the world to provide a comparative perspective.

GOVT 1609 Ethnicity, Nationalism and Citizenship*

6 credit points

Offered: July. Classes: (2 lectures & 1 tutorial)/week.

Decay of Empires like the Ottoman and Soviet unleashes nationalist forces that seem to involve an infinite regress: fragmentation into the smallest ethnic units. What is duty-worthy in the nation? Ties of blood and soil, like those of family, clan and tribe, characterise primordialism rather than ethical behaviour as such. Is this a truth or merely the way that we persuade ourselves that nationalism, racism and ethnicity are intractable to morality, beyond good and evil? Are philosophical reflection and ethical consciousness solvents of primordialism, and can multiethnic polities hold it at bay? These, the burning questions of post-modernity, which have been raised at critical junctures in the development of the state, and answered by theorists ancient as well as modern, will be the focus of this unit.

HORT1001 Horticultural Science 1A

6 credit points

Dr Jacobs, Mrde Kantzow, Prof. Burgess, Assoc. Prof. Maxwell, Dr McConchie

Offered: February. **Assumed knowledge:** HSC 2 unit Chemistry or 3 unit Science. **Prohibition:** CROP 1001, LWSC 1001. **Classes:** (3 lee & 3 prac)/wk, excursion. **Assessment:** One 2hr exam, prac.assignments.

This unit of study introduces the principles and practices of modern horticulture and agriculture and examines the relationships between the plants, animals and natural resources which make up production systems. The concepts of environmental and economic sustainability of horticultural and agricultural systems will be introduced.

Topics covered include Australian farming systems, regional horticultural and agricultural industries, farming operations and plant identification.

Practical: Field and laboratoryl sessions allow 'hands-on' experience in plant identification, propagation and equipment used by horticulturalists and provide an overview of horticultural industries in the Sydney region.

Reference books

V. Squires and P. Tow (eds) Dryland Fanning: a Systems Approach (Sydney University Press, 1992)

C.J. Pearson et al. A Plain English Guide to Agricultural Plants (Longman Cheshire, 1993)

M.W. Denny Air and Water: The Biology and Physics of Life's Media (Princeton University Press, 1993)

HORT 1002 Horticultural Science 1B

6 credit points
Dr Jacobs, Dr Sharma, Dr Cook, Mr deKantzow
Offered: July. **Corequisite:** HORT 1001. **Prohibition:** CROP 1002, LWSC 1002. **Classes:** (3 lee & 3 prac)/wk. **Assessment:** Assessment one 2 hr exam, prac, assignments.
This unit of study develops the theme of environmental sustainability of horticultural and agricultural production, and examines the physical principles which underpin diese production systems and the broad ecological relationships between plants, animals and natural resources used in horticulture and agriculture. Current and future ecological issues facing horticulture and agriculture are discussed. In addition, the static and dynamic forces involved in horticultural and agricultural structures and equipment, the behaviour and properties of water, and the physical aspects of weadier and the Australian climate will be discussed.
Practical: Laboratory and field practical sessions allow 'hands-on' experience with the equipment used by Australian farmers and feature measurement of some aspects of physical principles applied to farming operations including solar cells, the weather and tractor safety.
Textbooks
See HORT 1001 Horticultural S c i e n c e 1A

HORT 2001 Horticultural Science 2

6 credit points
Dr McConchie, Dr Goodwin, Dr Sutton
Offered: July. **Prerequisite:** HORT 1001 & HORT 1002 or CROP 1001 and CROP 1002 ot LWSC 1001 and LWSC 1002. **Corequisite:** CROP 2001. **Classes:** (3 lee & 3 prac)/wk. **Assessment:** One 3hr exam, assignments, prac book.
The unit of study covers topics on plant identification and plant use, horticultural production systems and irrigation. Topics in plant identification include identification of specific families. Horticultural production systems covers topics on the physiology and growth of perennial crops with special emphasis on management activities during winter/spring. The irrigation component discusses the application of scientific principles to the efficient and ecologically sound management of irrigation systems.
Reference book
H.T. Hartmann,D.E. Kester, F.T. Davies and R.L. Geneve Plant Propagation: Principles and Practices (Prentice Hall International 1997)
P. Baxter & P. Tankard Growing Fruit in Australia (Macmillan Australia, 1990)
M.E. lensen Design and Operation of Farm Irrigation Systems (American Society of Agricultural Engineers, 1980)

HORT 3001 Horticultural Science 3

8 credit points
Dr Goodwin
Offered: February. **Prerequisite:** CROP 2001 or HORT 2001 or AGRO 2002. **Classes:** (3 lee, 2 workshops, 1 prac & 2 excursions)/wk (including 1 two and a half day excursion). [Excursions: Week 2 Thursday (all day); Week 3 Wednesday 10am to Friday 1.00pm; Weeks4, 6,10,11,12,13Thursday (afternoon)]. **Assessment:** One 3hr exam (60%), assignments (40%).

Emphasis is given to the scientific basis for fruit and winegrape production and to the sustainable production of vegetable crops. Concepts underlying the establishment and management of urban plantings are introduced. The unit develops skills in the evaluation of the technical and environmental status of established orchards, vineyards and vegetable crops.
Textbooks
P Baxter Growing Fruit in Australia (Macmillan Australia, 1997)
A Bradshaw, B Hunt and T Walmsley Trees in the Urban Landscape (Spon, 1995)

HORT 3002 Flower and Nursery Crops 3

4 credit points
Dr Goodwin
Offered: July. **Prerequisite:** CROP 2001 or HORT 2001 or AGRO 2002. **Classes:** (2 lee, 2 prac)/wk [Excursions: Weeks 2,4 Thursday (all day); Weeks 5,11 Thursday (afternoon)]. **Assessment:** One 2 hr exam (60%), assignments (40%).

A discussion of the major aspects of the production of cut-flower and nursery crops, including protected cropping and glasshouse management. The unit will provide students with a detailed appreciation of the need for and methods of developing more precise production technology.
Reference book
K Handreck and N Black Growing Media for Ornamental Plants and Turf (NSW Univ Press), 1991

HORT 3003 Postharvest Biology and Technology 3

4 credit points
Dr R McConchie
Offered: February. **Prerequisite:** CROP 2001 or HORT 2001 or AGRO 2002. **Classes:** (1 lee, 1 tut,& 2 prac)/wk. **Assessment:** Assignments (40%), two 1 hr exams (60%).
The unit develops understanding and skills relevant to the maintenance of quality during the harvesting, handling, storage and marketing of fresh plants and plant parts. The subject integrates the postharvest physiology of products that are handled or marketed in a living state, with the technological and economic challenges associated with delivering them from the field to the consumer. Case study examples will be drawn from fruits, vegetables, cut flowers, nursery and foliage crops, turf and edible fungi. Students will study all operations from harvesting to consumer evaluation.

HORT 4001 Horticultural Science 4A

24 credit points
Offered: February. **Prerequisite:** HORT 3001. **Classes:** Excursions: Wk 3 Friday pm, Wk 5 Saturday am.
A unit of study offering an advanced treatment of the scientific and technical basis of horticultural production and management. The research project and options selected must be approved by the Coordinator and by the Head of Department.

The unit will include:
Issues in Horticulture
(8 credit points)

Students attend a series of workshops, seminars and excursions designed to provide them with a broad overview of current issues affecting the horticultural industries. Assessment each semester will be by a one hour examination, plus an essay of 5000 words or a design and a report on a topic of their choice, selected from a list which covers the main efficiency, marketing and environmental issues affecting horticulture.
Scientific Basis of Horticultural Production and Management
(16 credit points)

An advanced series of lectures, practical classes and excursions on scientific aspects of horticultural production and management, with emphasis on environmental and marketing issues. The units covered will depend on which of the optional third year Horticultural Science units of study students have completed.

Research Project
(24 credit points)

Students carry out a research project under the close supervision of a member of the staff. Projects are likely to be in the areas of the production of fruit, vegetables or ornamentals, of posdiarvest biology or technology, or urban horticulture.In your project you will be expected to define a testable hypothesis, to test that hypothesis, and to bring your results and conclusions together in a clear, logically written thesis. Students with a sufficiently strong academic record and who produce a meritorious thesis may be eligible for honours.

HORT 4002 Horticultural Science 4B

24 credit points
Offered: July. **Prerequisite:** HORT 3001.
See HORT 4001 Horticultural Science 4A.

LWSC 1001 **Land and Water Science 1A**

6 credit points

Offered: February. **Prohibition:** CROP 1001 and HORT1001. **Assessment:** One 2 hr exam, assignments, weekly class practical tests.

This unit of study introduces the principles and practices of modern primary industries and examines the relationships between the plants, animals and natural resources that make up production systems. The concepts of environmental and economic sustainability of production systems will be introduced.

Topics covered include introduction to ecological systems, regional resources and primary industries, technology and ecosystem disturbance and plant identification.

Practical: Field practical sessions allow 'hands-on' experience with the tillage, sowing and harvesting equipment used in primary production in Australia and include visits to sites of relevance to the management of land and water resources.

Textbooks

V.Squires and P.Tow (eds) Dryland farming: a systems approach (Sydney University Press), 1992

SCARM (1998) Sustainable agriculture: assessing Australia's recent performance (CSIRO)

LWSC 1002 **Land and Water Science 1B**

6 credit points

Offered: July. **Corequisite:** (LWSC 1001) Land and Water Science 1A. **Prohibition:** CROP 1002 and HORT 1002. **Assessment:** One 2 hr exam, assignments, weekly class practical tests.

This unit of study develops the theme of environmental sustainability of primary production and examines the physical principles that underpin production systems. It examines the broad ecological relationships between the plants, animals and natural resources used in production systems, and deals with some of the problems facing primary production in the future. In addition the static and dynamic forces involved in structures and equipment, the behaviour and properties of water in biological systems and the physical aspects of weather and the changing Australian climate will be discussed.

Topics covered include climatology, environmental physics, ecosystems management, global issues of ecological significance and plant identification.

Practical: Field practical sessions allow "hands-on" experience with the tillage, sowing and harvesting equipment used in primary production in Australia and feature measurement of some aspects of the physical principles as applied to production systems including solar cells, the weather and vehicle safety.

Reference Books

V.Squires and P.Tow (eds) Dryland farming: a systems approach (Sydney University Press), 1992

SCARM (1998) Sustainable agriculture;assessing Australia's recent performance (CSIRO)

M.W. Denny Air and Water: The Biology and Physics of Life's Media (Princeton University Press), 1993

LWSC 2001 **Land and Water Science 2**

4 credit points

Dr Al Bakri

Offered: July. **Assumed knowledge:** LWSC 1001 and LWSC 1002 or CROP 1001 and CROP 1002 or HORT 1001 and HORT 1002, ENV11001, ENV11002, BIOL 2004, SOIL 2003. **Classes:** lec/tut/sem. **Assessment:** Written report, oral presentation, additional to be advised at first class.

Sustainable Land and Water Management is a practical and field-based unit which focuses on management of land and water resources. The unit assumes that students have already attained a basic understanding of land and water sciences and is designed to build on other units by facilitating students to apply the scientific theory and principles, learned through other course units, to understand causes and management of specific degradation problems.

The theoretical teaching in this unit will be designed to develop students' appreciation and understanding of the role and importance of integrated multidisciplinary models (e.g. Landscape Genesis Model) to the development of appropriate and sustainable management strategies and practices at the catchment level. Case studies will be used to facilitate the application of a conceptual model to selected problems such as salinity, eutrophication, algal blooms, erosion, and acidification. The conceptual framework of this unit is based on the premise that:

- All land and water degradation problems are the result of complex and dynamic interactions of both biophysical processes and socio-economic factors
- As socio-economic development is dependent on the availability of healthy and robust biophysical systems, scientific investigations to determine the inherent tolerance and constraints of natural resources should precede socio-economic studies in relation to resource and catchment management.
- Land and water degradation problems are interrelated and interconnected. It is imperative, therefore, that an integrated multidisciplinary model be employed to develop cost-effective and sustainable catchment management plan.

Practical: 5 day field program at Orange.

MATH 1001 **Differential Calculus**

3 credit points

Offered: February, January (short). **Assumed knowledge:** HSC 3-unit Mathematics. **Prohibition:** May not be counted with MATH 1901 or 1011. Classes: 2 lee & 1 tut/wk. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1001 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit of study looks at complex numbers, functions of a single variable, limits and continuity, vector functions and functions of two variables. Differential calculus is extended to functions of two variables. Taylor's theorem as a higher order mean value theorem.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1002 **Linear Algebra**

3 credit points

Offered: February, January (short). **Assumed knowledge:** HSC 3-unit Mathematics. **Prohibition:** May not be counted with MATH 1902 or 1012. **Classes:** 2 lee & 1 tut/wk. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1002 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit of study introduces vectors and vector algebra, linear algebra including matrices, determinants, eigenvalues and eigenvectors.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1003 **Integral Calculus and Modelling**

3 credit points

Offered: July, January (short). **Assumed knowledge:** HSC 4-unit Mathematics or MATH 1001. **Prohibition:** May not be counted with MATH 1903 or 1013. **Classes:** 2 lee & 1 tut/wk. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1003 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit of study first develops the idea of the definite integral from Riemann sums, leading to the Fundamental Theorem of Calculus. Various forms of integration are considered, such as integration by parts.The second part is an introduction to the use of first and second order differential equations to model a variety of scientific phenomena.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1005 Statistics

3 credit points

Offered: July, January (short). **Assumed knowledge:** HSC 2-unit Mathematics. **Prohibition:** May not be counted with MATH 1905 or 1015. **Classes: 2** lee **& 1** tut/wk. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1005 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit offers a comprehensive introduction to data analysis, probability, sampling, and inference including t-tests, confidence intervals and chi-squared goodness of fit tests.

There are comprehensive details of this unit of study in the Junior Mathematics Handbook distributed at the time of enrolment.

Textbooks

As set out in the Junior Mathematics Handbook

Mathematics units in the Bachelor of Agricultural Economics

Units offered by the School of Mathematics and Statistics in the Faculty of Science are listed here. Refer to the Faculty of Science Handbook for unit descriptions.

- MATH 1011 Life Sciences Calculus, 3 cp
- MATH 1012 Life Sciences Algebra, 3 cp
- MATH 1013 Life Sciences Difference and Differential Equations, 3 cp
- MATH 1015 Life Sciences Statistics, 3 cp.

MICR 2013 Introductory Microbiology 2

4 credit points

Dr P New

Offered: February. **Prerequisite:** BIOL 1001 or BIOL 1201, LWSC 1002 or CROP 1002 or HORT1002, 12 credit points of First Year Chemistry. **Prohibition:** MICR 2003, MICR 2001. **Classes:** (2.5 lec,.3 tut, 1.2 prac)wk. **Assessment:** one 2hr theory exam(75%), one 2hr prac exam, pracs.

This unit of study aims to give students an understanding of the relevance of microorganisms to land and water science, as well as to introduce them to the main areas of microbiology. Lectures are essentially the same as for Introductory Microbiology (MICR 2001) in the Faculty of Science. Topics covered include history and scope of microbiology; methodology; comparison of major groups of microorganisms; detailed study of bacteria including structure, classification and identification, growth; microbiology of the natural environment including the soil, water, nutrient cycling and nitrogen fixation.

MICR 2101 Agricultural Microbiology 2

6 credit points

Dr New(Coordinator),Dr Carter, Mrs Dalins, Dr Duxbury, Prof. Reeves

Offered: February. **Prerequisite:** First year Biology, First year Chemistry or Chemistry 1 Advanced. **Classes:** (3 lee, 2 prac & 1 tut)/wk. **Assessment:** One 3hr theory exam, one 3hr prac exam, prac, 2 assignments.

This unit of study aims to give students an understanding of the relevance of microorganisms to agriculture, as well as to introduce them to the main areas of microbiology. Lectures are the same as for Introductory Microbiology (MICR 2001) in the Faculty of Science.

Topics covered include history and scope of microbiology; methodology; comparison of major groups of microorganisms; detailed study of bacteria including structure, classification and identification, growth and death; bacterial genetics; microbiology of the natural environment including the soil, nutrient cycling and nitrogen fixation.

Textbooks

L.M. Prescott et al. Microbiology (W.C. Brown, 1999)

MICR 3102 Agricultural Microbiology 3

8 credit points

Dr New(Coordinator), Dr Carter, Mrs Dalins, Dr Duxbury, Prof. Reeves

Offered: July. **Prerequisite:** MICR 2101. **Classes:** (3 lee, 4 prac & 1 tut)/wk. **Assessment:** One 3hr theory exam, one 3hr prac exam, prac, 2 assignments.

This is a unit of study in molecular microbiology and applied microbiology for students wishing to gain more knowledge in microbiology or those wishing to specialise in Microbiology in Fourth Year.

Molecular microbiology of bacteria, including genetics, regulation and manipulation of the bacterial genome, prokaryote structure, taxonomy and evolution; human and animal health and disease; food microbiology; industrial microbiology.

Textbooks

As for MICR 2101 Agricultural Microbiology 2

MICR 4101 Agricultural Microbiology 4A

24 credit points

Dr New

Offered: February. **Prerequisite:** MICR 3102. **Corequisite:** MICR 4102. **Classes:** (3 lee, 6 prac, 3 other activities)wk. **Assessment:** One 1.5 h & one 2 hr theory exam, prac, research project.

The coursework for this unit follows substantially the same syllabus as the senior unit of study for Science students, General and Medical Microbiology (MICR 3001). As well as lectures and practical classes there is a variety of other activities, including workshops on library searches and laboratory instrumentation, mini lectures on data handling and laboratory safety, poster presentations, skills testing and tutorials. The unit of study covers two general areas:

Medical Microbiology: medical bacteriology, virology and parasitic diseases, epidemiology.

General Microbiology: microbial growth and metabolism, microbial ecology, food microbiology.

In addition to the coursework, students undertake a research project which runs over both the March and July semesters and accounts for roughly half of the final mark.

MICR 4102 Agricultural Microbiology 4B

24 credit points

Dr New

Offered: July. Prerequisite: MICR 3102. Corequisite: MICR 4101. Classes: (3 lee, 6 prac, 3 other activities)wk. Assessment: One 1.5 hr & one 2 hr theory exams, prac, seminar, research project.

The coursework for this unit follows substantially the same syllabus as the senior unit of study for Science students, Molecular and Environmental Microbiology (MICR 3002). As well as lectures and practical classes there is a variety of other activities, including workshops, mini lectures, poster presentations, skills testing and tutorials. The unit of study covers two general areas:

Molecular Microbiology: aspects of bacterial structure and physiology, principles of molecular pathogenicity.

Environmental Microbiology: microbial ecology, plant microbiology.

In addition to the coursework, students undertake a research project which runs over both the March and July semesters and accounts for roughly half of the final mark.

Marketing in the Bachelor of Agricultural Economics

Units of study offered by the Department of Marketing in the Faculty of Economics and Business follow this entry.

MKTG 2001 Marketing Principles

8 credit points

Offered: February, January (short). **Prerequisite:** ECON 1001, ECON 1002, ECMT1010 and ECMT 1020. **Corequisite:** ACCT 1001 or ACCT 1003. **Classes:** (1 lee & 1 tut)/wk. **Assessment:** Two 2hr exams (or equivalent), assignments.

NB: Marketing units of study commence in secondyear, but prerequisites must be completed in first year.

Introduction to the terminology and functions of marketing in modern business practice. Market forces and opportunities, with reference to the role of social, economic, political and global influences and trends. Macro (societal) and micro (individual and firm) implications of the market process and marketing decision-making.

MKTG 2002 **Consumer Behaviour**

8 credit points

Offered: July. **Prerequisite:** MKTG 2001. **Corequisite:** MKTG 2003. **Classes:** (1 lee & 1 tut)/wk. **Assessment:** Two 2hr exams (or equivalent), assignments.

Introduction to and overview of economic, psychological and sociological bases of consumer behaviour as they relate to the purchase and consumption of goods and services. Marketing implications of consumer behaviour and the interaction of consumers and the marketing process of organisations.

MKTG 2003 **Marketing Research I**

8 credit points

Offered: July. **Prerequisite:** MKTG 2001. **Corequisite:** MKTG 2002. **Classes:** (1 lee & 1 tut)/wk. **Assessment:** Two 2hr exams (or equivalent), assignments.

Introduction to marketing research and the marketing research industry. Basics of problem recognition, formulation, research design and reporting. Qualitative research methods. Survey design and data collection. Data entry and coding. Introduction to basic quantitative analysis. Research practicum.

MKTG 3001 **Marketing Research II**

8 credit points

Offered: February. **Prerequisite:** MKTG 2001 and MKTG 2002 and MKTG 2003 and ECON 2001. **Classes: (1** lee & 1 tut)/wk. **Assessment:** Two 2hr exams (or equivalent), assignments.

Quantitative marketing research methods, including multivariate research methods and models. Analysis and interpretation of data, report preparation and presentation. Applications to market segmentation, targeting, positioning and demand forecasting. Advanced research methods and overview of current state-of-the-art marketing research. Research practicum.

MKTG 3002 **Marketing Communications**

8 credit points

Offered: July. **Prerequisite:** MKTG 2001 and MKTG 2002 and MKTG 2003 and MKTG 3001 and ECON 2001. **Classes:** (1 lee & 1 tut)/wk. **Assessment:** Two 2hr exams (or equivalent), assignments.

Introduction to and overview of current theory and practice in advertising in the main media (television, radio, print, outdoor, cinema), sales promotion, personal selling and the new media, such as the Internet. Course includes case studies and major research project.

MKTG 3003 **Retail and Services Marketing**

8 credit points

Offered: February. **Prerequisite:** MKTG 2001 and MKTG 2002 and MKTG 2003 and ECON 2001. **Corequisite:** MKTG 3001. **Classes:** 1 lec/wk. **Assessment:** Two 2hr exams (or equivalent), assignments.

The role of marketing and the marketing function within retail and service organisations. Special marketing issues involved in these organisations. Course includes case study and research practicum.

MKTG 3004 **New Products Marketing**

8 credit points

Offered: July. **Prerequisite:** MKTG 2001 and MKTG 2002 and MKTG 2003 and MKTG 3001 and ECON 2001. **Classes: (1** lee & 1 tut)/wk. **Assessment:** Two 2hr exams (or equivalent), assignments.

Development and marketing of new consumer and industrial products and the role of the marketing function in that process. Identification of potentially profitable target markets and demand estimation. Dynamics of new product introductions. Course includes case study and research practicum.

PPAT 3002 **Plant Disease 3**

4 credit points

Professor Burgess, Dr Summerell, Dr Park, Dr Wellings

Offered: July. **Prerequisite:** CROP 2001, CROP 2002, GENE 2001. **Classes:** (2 lee & 2 prac)/wk. **Assessment:** One 0.5 hr theory exam, one 1 hr prac exam, assignment, 3 short written quizzes.

This unit of study provides an introduction to the common plant diseases which limit agricultural and horticultural production or their control. Topics include symptoms and recognition of diseases and disorders such as frost and diagnostic procedures as well as biology, epidemiology and control of the major pathogens, fungi, viruses bacteria and nematodes. An introduction to breeding for resistance and the application of molecular based technologies in plant disease studies will also be included.

Reference books

G.N. Agrios Plant Pathology 4th edn (Academic Press, 1997)

J.F. Brown and H.J.Ogle (eds) Plant Pathogens and Plant Diseases (Rockvale Publications, 1997)

J.G. Manners Principles of Plant Pathology 2nd edn (Cambridge University Press, 1993)

D. Persley (ed.) Diseases of Fruit Crops (DPI Publications, 1993)

D. Persley (ed.) Diseases of Vegetable Crops (DPI Publications, 1994)

PPAT 4001 **Plant Pathology 4A**

24 credit points

Professor Burgess, Dr Summerell, Dr Park, Dr Wellings and external specialists

Offered: February. **Prerequisite:** PPAT 3002.

The plant pathology specialisation prepares students for careers in professional plant pathology and in extension in plant pathology and crop protection. It provides an excellent background for entry into research careers especially in the field of fungal plant pathology. Experience in the field and in diagnostic procedures, especially the application of molecular based diagnostics, provides a very appropriate background for diagnostic and extension type careers. Students are required to complete a relevant 24-unit research project (PPAT 4002) (Plant Pathology 4B) and take the following three core modules and one other relevant 6-credit point module or unit of study, approved by the program coordinator.

*Soil Biology **and Biodiversity***

6 credit points.

An introduction to the diversity of organisms found in the soil, and the ecological principles governing their activities and interactions. Practical applications are illustrated with particular reference to soilborne plant diseases. Practical classes demonstrate important tecniques for working with soil organisms and soilborne diseases, and for controlling the soil environment, especially soil water, to manipulate biological activity. Topics covered include the nature of the soil biota; isolation, identification and quantification of soil organisms; pathogenic and mutualistic interactions between fungi and roots; mycorrhizae; the nature and control of soilborne plant diseases; effects of water potential and temperature on the activity and survival of soil fungi; temporal and spatial distribution of soil fungi and soilborne diseases; and the soil biology of conservation farming.

*Advanced **Field and laboratory** Studies*

6 credit points.

This module is designed to provide experience in field studies on the diagnosis and control of plant disease and diagnostic procedures for all types of pathogens. It will include studies in modern approaches to fungal taxonomy and identification, including molecular techniques. It will also include an introduction to modern methods for breeding for resistance to pathogens. An introduction to scientific investigations and literature surveys including computer research techniques will also be included.

Physiology of Plant Disease

6 credit points.

A series of lectures, tutorials and practicals on the processes involved in the interaction between plant cells and parasitic fungi and bacteria. Includes an introduction to the genetic basis of host resistance and parasitic specialisation. Covers the physiology of infection, host responses, roles of enzymes and toxins in

parasitism, defence mechanisms of plants and the physiological basis of specificity.

Research Project

24 credit points.

A research project will be carried out in an aspect of one of the above subjects.

Textbooks

L. Bos Introduction to Plant Virology (Longman, 1983))Dr Semmerell to advise

S. Issac Fungal-Plant Interactions (Chapman & Hall, 1992)

Reference books

R.I.B. Francki et al. Atlas of Plant Viruses vols 1 & 2 (CRC Press, 1985)

R.E.F. Matthews Plant Virology 3rd edn (Academic Press, 1991)

R.E.F. Matdiews Fundamentals of Plant Virology (Academic Press, 1992)

PPAT4002 **Plant Pathology 4B**

24 credit points

Prof Burgess

Offered: July. **Prerequisite:** PPAT3002.

See Plant Pathology 4A.

Textbooks

See Plant Pathology 4A

RSIS 3001 **Rural Spatial Information Systems 3**

4 credit points

Prof McBratney, Dr Odeh

Offered: February. **Prerequisite:** SOIL 2003, BIOM 2001 or BIOM 2002. **Classes:** Easter break, four 8 hr days plus one 3 day field excursion. **Assessment:** One 2hr exam, seminar, report on excursion and lab work.

The lecture material will present two main themes. (1) Data sources and acquisition methods:- existing maps and their digitisation, digital elevation models and global positioning system (GPS), single-, multi- and hyper- spectral, active and passive sensor systems at gamma-ray, visible, infra-red and radio frequencies. (2) Processing of spatial data. This will elucidate the following topics:- conceptual models of spatial phenomena, spatial data in the computer, building and accessing an entity database and continuous fields, data analysis using entities and continuous fields, and errors and quality issues in spatial data The lectures will also review Spatial Information Systems software.

Laboratory exercises will focus on applications which include land-cover assessment, regional hydrology and soil erosion risk at the whole-farm, catchment and regional scales using the ARCVIEW and ARC INFO software.

The field excursion will comprise a visit to the field site (Arthursleigh) for ground truthing of an erosion-risk map. Two days will be spent in Canberra visiting government agencies supplying and using natural resource data, e.g., Bureau of Rural Sciences, CSIRO Land & Water, AUSLIG and AGSO.

- The terms Spatial Information Systems (SIS) and Geographic Information Systems (GIS) are used interchangeably in the literature. The former is more generic and does not imply certain scales.

Textbooks

P.A. Burrough and R.A. McDonnell Principles of Geographical Information Systems 2nd edn (Oxford University Press, 1998)

SOIL 2003 **Soil Science 2**

6 credit points

Dr Cattle, Prof. McBratney, Dr Singh

Offered: February. **Classes:** (3 lee & 3hr prac)/wk. **Assessment:** One 3hr theory exam, one 1hr prac exam, quizzes and prac book.

This unit of study is concerned with the fundamental properties of soil, the factors of soil formation, and the processes that operate in the soil system. The components of the unit of study are: pedology; soil physics and soil chemistry. These components are synthesised by reference to common soil profiles. The study of soil in the field starts with field description and assessment of essential characteristics. The physics of water and gas movement, temperature, density, swelling and strength are considered. Soil chemistry includes properties of organic matter, cation exchange capacity, nitrogen, phosphorus, potassium and acidity. Common soil types of N.S.W, are studied in relation to their formation, properties and classification.

Reference books

N.C. Brady The Nature and Properties of Soils 10th edn (Macmillan, 1990)

K.O. Campbell and J.W. Bowyer (eds) The Scientific Basis of Modern Agriculture (Sydney U.P., 1988)

D.L. Rowell, Soil Science: Methods and Applications (Longman, 1994)

R.E. White Introduction to the Principles and Practice of Soil Science 3rd edn (Blackwells Scientific, 1997)

A. Wild (ed.) Russell's Soil Conditions and Plant Growth 11th edn (Wiley, 1988)

SOIL 3003 **Soil Science 3**

8 credit points

Dr Singh, Dr Cattle, Prof. McBratney

Offered: July. **Prerequisite:** SOIL 2003. **Classes:** (4 lee & 3hr prac)/wk; 5 days in the field in last or 2nd last week mid-year break. **Assessment:** One 3hrexam, reports on field and lab work.

Lectures on classification of soil, soil survey, pedological processes, geomorphology and soil stratigraphy, aerial photography, geostatistics and their application to land evaluation for rural purposes, the forms of land degradation occurring in Australia, the management of the soil environment and processes and management conducive to sustainable soil husbandry.

Five days' field work in the last week of the mid-year break will take place at a country location and involves landscape description and the description, mapping and sampling of soil profiles for the purpose of assessing land-use capability and field variability of soil properties. The field-work component is a compulsory part of the unit of study.

Practical: Thirty-six hours of laboratory work involves routine physical, chemical and statistical analyses of samples taken in the field relevant to assessment of the land use potential and the quantification of the soil variability and soil degradation at the survey site.

Reference books

T.J. Marshall and J.W. Holmes Soil Physics 3rd edn (Cambridge U.P., 1996)

D. Dent and A. Young Soil Survey and Land Evaluation (Allen & Unwin, 1981)

FAO A Framework for Land Evaluation FAO Soil Bulletin No. 32 (FAO, 1976)

E.A. FitzPatrick Soils (Longman, 1980)

R.H. Gunn et al. Australian Soil and Land Survey Handbook: Guidelines for Conducting Surveys (Inkata, 1988)

R.P.C. Morgan Soil Erosion and Conservation (Longman, 1986)

A. Wild (ed.) Russell's Soil Conditions and Plant Growth 11th edn (Wiley, 1988)

SOIL 4002 **Soil Science 4A**

24 credit points

Prof McBratney

Offered: February. **Prerequisite:** SOIL 3003.

The soil science specialisation trains people for careers in professional soil science and extension. It provides an excellent background for entry into all aspects of soil science research ranging from physics through mineralogy and chemistry to pedology. Increasing emphasis is being given to aspects of soil sustainability and environmental soil science in order that graduates can meet the growing national demands in this area.

The prerequisite for this unit of study is Soil Science 3. Students are required to complete a relevant 24-unit research project and take at least diree of the following four modules: Advanced Soil Chemistry, Advanced Field and Laboratory Soil Physics, Advanced Methods of Soil Analysis and Advanced Pedology, and any other 6-credit point modules approved by the Head of Department.

Reference books

Division of Soils, CSIRO Soils: an Australian Viewpoint (CSIRO/Academic, 1983)

A. Wild (ed.) Russell's Soil Conditions and Plant Growth 11 th edn (Longman, 1988)

Advanced Field and Laboratory Soil Physics

6 credit points. Coordinator: Prof. McBratney. Offered: March. Classes: (2 lee, 1 tut & 5hr prac)/7wk, 5 days in the field (prior to beginning of March). Assessment: one 3hr exam, field and prac reports, problem sets, essay.

The emphasis is to examine the quantitative aspects of soil physics particularly in relation to the transfer of energy, gas, water, solids and solutes in soil.

Lecture and lab topics include heat flow, gas movement, soil water energetics, saturated and unsaturated flow of soil water, infiltration, solute movement, water and wind erosion as well as the fundamentals of numerical computer modelling of soil physical processes.

Five days' field-work, in the week prior to the beginning of March Semester, involves field measurement of soil physical properties such as shear and tensile strength, electrical resistivity, hydraulic conductivity and infiltration rates and moisture content.

Reference books

G.S. Campbell Soil Physics with BASIC (Elsevier, 1985)

R.J. Hanks and G.L. Ashcroft Applied Soil Physics (Springer, 1980)

P. Koorevaar et al. Elements of Soil Physics (Elsevier, 1983)

T.J. Marshall and J.W. Holmes Soil Physics 2nd edn (Cambridge U.P., 1988)

J. Richter The Soil as a Reactor (Catena, Cremlingen, 1987)

Advanced Pedology

6 credit points. Coordinator: Dr Cattle. Offered: March. Classes: (3 lee, 1 tut & 8hr prac)/7 wks, 5 days in the field (prior to beginning of March). Assessment: one 3hr exam, prac reports, field trip report, student lecture.

This unit of study centres on a weathering study which traces the changes from a rock parent material up through the soil profile. The methods of study include particle-size analysis and extraction of a fine-sand fraction for optical identification and quantification of the mineral species present. Thin sections of the rock and profile are examined and the main features identified and quantified. The data from the sand analysis, micromorphological investigations and clay mineral assessments are used to provide an understanding of the pedogenesis of the particular soil. A field trip to study the variety of soil types in their environmental setting is made two weeks prior to the commencement of the March semester.

A detailed study, including exercises, is made of the USDA soil classification system, Soil Taxonomy and the World Reference Base for soil resources (WRB).

Reference books

G.W. Brindley and G. Brown (eds) Crystal Structure of Clay Minerals and their X-ray Identification (Mineralogical Society, London, 1980)

E AFitzPatrick Soils (Longman, 1980)

E A FitzPatrick Micromorphology of Soils (Chapman & Hall, 1984)

R F Isbell The Australian Soil Classification (CSIRO Publishing 1996)

Advanced Methods of Soil Analysis

6 credit points. Prof McBratney, Dr Singh, Dr Cattle Offered: July. Classes: (3 lee, 1 tut & 8hr prac)/7wk (2nd half). Assessment: one 3hr exarn, lab report, problem sets, essay.

Seven weeks of lectures and practicals concerning new and advanced methods for studying soil. Topics include electronic microscopy, advanced X-ray analysis, soil dating techniques including 13 C and thermoluminescence, dynamic simulation modelling of carbon turnover, quality control of routine analytical techniques and measurement of soil microbial biomass.

Advanced Soil Chemistry

6 credit points. Coordinator: Dr Singh. Offered: March. Classes: (3 lee, 1 tut & 8hrprac)/6wk (1st half). Assessment: one 3hr exam, lab report, problem sets, essay.

Topics include clay mineralogy, cation exchange capacity and pH dependent charge, soil charge characteristics, soil chemical analyses and their interpretation, formation of acid soil-Al and Mn toxicities, chemistry and adsorption/desorption of K, P and S in soil, soil solution and speciation of ionic components, soil salinity, oxidation/reduction reactions in soil, chemistry of soil organic matter and nitrogen, soil enzymology and solute movement.

Reference books

S.A. Barber Soil Nutrient Bioavailability (Wiley, 1984)

N.J. Barrow Reactions with Variable Charge Soils (Martinus Nijhoff, Dordrecht, 1987)

D.J. Greenland and M.H.B. Hayes The Chemistry of Soil Constituents (Wiley, 1978)

A.D. Robson (ed.) Soil Acidity and Plant Growth (Academic, 1989)

G. Sposito The Chemistry of Soils (Oxford, 1989)

An Introduction to Precision Agriculture

Coordinator: Professor McBratney. Classes: 5 days in the field (at Easter), 5 days intensive course work (during mid-year break). Assessment: Exam, practical reports essay.

Precision Agriculture involves matching management practices with crop and soil requirements as they vary across a site. Fields are treated differentially, if required, unlike conventional management, this type of management is only possible because of the advent of new hardward and software technologies which allow accurate positioning, fine-scale soil and crop monitoring, data interpretation and variable-rate application of inputs.

This unit of study provides an introduction to Precision Agriculture. It will consider within-field positioning, yield monitoring and mapping, remote sensing, soil sensing, sampling of soil, yield and soil-map production, production of digital elevation models, interpolation and prediction techniques, crop growth models and response vurves for decision-support and differential management.

Five days will be spent in the field, where the practical application of various technologies will be demonstrated and soil and crop data will be collected by remote sensing, soil sensing and sampling and yield monitoring. The data collected during this period will be used in practical exercises conducted during the 5 days of intensive course work and as the basis of a report.

Textbook

A.B. McBratney, B.M. Whelan, R.A. Viscarra Rossel, TEA. Bishop, B.C. Boydell, M.J. Pringle and T.M. Shatar Precision Agriculture: an Environmentally and Economically Sustainable Strategy (Australian Centre for Precision Agriculture, Sydney, 1997)

SOIL 4003 Soil Science 4B

24 credit points

Professor McBratney

Offered: July. **Corequisite:** SOIL4002.

Research Project

See SOUL 4002 Soil Science 4A.

CHAPTER 4

Postgraduate course requirements

Degrees

The higher degrees in the Faculty of Agriculture are:

DAgrEc	Doctor of Agricultural Economics
DScAgr	Doctor of Science in Agriculture
PhD	Doctor of Philosophy
MAgrEc	Master of Agricultural Economics
MScAgr	Master of Science in Agriculture
MAgr	Master of Agriculture.
APEC MSDevel	Master of Sustainable Development

The regulations governing the award of these degrees are printed in the Calendar, Vol. I: Statutes and Regulations section (Appendix 1). Prospective candidates should consult with the Head of the Department most closely concerned before submitting an application for admission to candidature.

All candidates would normally begin in March Semester (near the end of February). In some cases candidates may be able to commence in July Semester (about mid to late July).

The following statements summarise part only of the regulations governing the award of these degrees.

Doctor of Agricultural Economics and Doctor of Science in Agriculture

The degrees of Doctor of Agricultural Economics and Doctor of Science in Agriculture shall not be conferred until the candidate is a graduate of eight years' standing from the degree which qualified him or her for candidature. The degree may be awarded for published work which, in the opinion of the examiners, has been generally recognised by scholars in the field concerned as a distinguished contribution to knowledge.

Doctor of Philosophy

The degree of Doctor of Philosophy is a research degree awarded for a thesis considered to be a substantially original contribution to the subject concerned. Some coursework may be required (mainly in the form of seminars) but in no case is it a major component.

Applicants should normally hold a master's degree or a bachelor's degree with first or second class honours of the University of Sydney, or an equivalent qualification from another university or institution.

The degree may be taken on either a full-time or part-time basis.

In the case of full-time candidates, the minimum period of candidature is two years for candidates holding a master's degree or equivalent, or three years in the case of candidates holding a bachelor's degree with first class or second class honours; the maximum period of candidature is normally four years. The first 12 months of candidature is normally on probation.

Part-time candidature may be approved for applicants who can demonstrate that they are engaged in an occupation or other activity which leaves them substantially free to pursue their candidature for the degree. They should be able to devote at least 20 hours per week to candidature including at least one day per week during each year of candidature or an equivalent annual period made up in blocks. Normally the minimum period of candidature will be determined on the recommendation of the Faculty but in any case will not be less than three years; the maximum period of candidature is normally eight years.

Master of Agricultural Economics (MAgrEc), Master of Science in Agriculture (MScAgr) and Master of Agriculture (MAgr)

Graduates of the University of Sydney who have completed units of study acceptable to the Faculty of Agriculture or persons who, in the opinion of the Faculty, have qualifications equivalent to those required of a graduate of the University of Sydney, may apply for admission as candidates for the degree of master.

Master of Agricultural Economics and Master of Science in Agriculture

Candidates engage in research culminating in a thesis for two to three years full-time or pro rata part-time. Some honours graduates (or equivalent) may be eligible for a minimum candidature of one year full-time. A candidate may be required to serve a period of probation for not more than one year and to complete such work during the period as may be prescribed.

Master of Agriculture

Candidates engage in units of advanced study in some branch of agriculture for one year full-time or pro rata part-time. Candidates proceed by coursework including a research project comprising between 15% and 40% of the year's work in the areas of study agricultural chemistry, agricultural entomology, agricultural genetics, agronomy, animal science, biometry, cereal chemistry, cereal science, horticultural science, microbiology, plant breeding, plant pathology, plant protection, soil conservation, soil contamination, soil science and turf management. For the degree in agricultural economics, a research project is an optional component. The first semester of candidature is normally on probation.

APEC Master of Sustainable Development

The APEC Master of Sustainable Development is an international education initiative endorsed by the Asia-Pacific Economic Cooperation forum (APEC). It is designed to enhance the professional capacities, technical skills and knowledge base of middle to senior level managers responsible for environmental management and policy development in the Asia-Pacific region. Established as coursework study and delivered through conjoint teaching arrangements, the program has the institutional support of the University of Malaya, the University of Queensland and the Asian Institute of Management (Philippines). The program aims to address the capacity building requirements for establishing environmentally sound economic development in the APEC region. With an emphasis on developing those human resource competencies that help generate greater cooperative processes and regional linkages, the program adopts an interdisciplinary approach to understanding the practicalities of sustainable development. It has been specially designed for intensive mode delivery. Candidates will also engage in research, field studies and networking activities that encourage greater collaboration between government agencies, research institutions and the business community throughout the Asia-Pacific region.

Diplomas

The following postgraduate diplomas are awarded by the Faculty of Agriculture:

- GradDip AgrEc - Graduate Diploma in Agricultural Economics
- GradDipAgrSc - Graduate Diploma in Agricultural Science.

The Graduate Diploma in Agricultural Science shall be awarded in the following subject areas and the testamur for the diploma shall specify the subject area: agricultural chemistry; agricultural entomology; agricultural genetics; agronomy; animal science; biometry; horticultural science; microbiology; plant pathology; plant protection, soil science and turf management.

Graduates of the University of Sydney who have completed units of study acceptable to the Faculty of Agriculture or persons who, in the opinion of the Faculty, have qualifications equivalent to those required of a graduate of the University of Sydney, may apply for admission as candidates for a diploma.

Candidates engage in units of advanced study in some branch of agriculture, for one year full-time or pro rata part-time. Candidates proceed by coursework including a research project comprising between 15% and 50% of the year's work except that in agricultural economics a research project is an optional component of the coursework required. The first semester of candidature is normally on probation.

Table of units of advanced study - MAgr (Agricultural Science subject areas) and GradDipAgrSc

Units with the same name but different unit values are mutually exclusive.

Code	Unit of study	Credit points	Comment
Agricultural Chemistry			
AGCH5001	Chemistry and Biochemistry of Biological Macromolecules A	8	
AGCH5002	Chemistry and Biochemistry of Biological Macromolecules B	8	
AGCH5003	Chemistry and Biochemistry of Biological Macromolecules C	4	
AGCH5004	Chemistry and Biochemistry of Biological Macromolecules D	4	
AGCH5005	Methods of Analysis of Agricultural & Food Products and the Environ. A	8	
AGCH5006	Methods of Analysis of Agricultural & Food Products and the Environ. B	8	
AGCH5007	Methods of Analysis of Agricultural & Food Products and the Environ. C	4	
AGCH5008	Methods of Analysis of Agricultural & Food Products and the Environ. D	4	
AGCH5009	Cereal Chemistry A	8	
AGCH5010	Cereal Chemistry B	8	
AGCH5011	Cereal Chemistry C	4	
AGCH5012	Cereal Chemistry D	4	
AGCH5013	Research Methods in Agricultural and Biological Chemistry	8	Compulsory
AGCH5018	Research Project (Agricultural Chemistry)	24	Compulsory
AGCH5019	Research Project A (Agricultural Chemistry)	16	Compulsory
Other units approved by the Head of Department up to 8 credit points			
Cereal Chemistry MAgr only			
As for Agricultural Chemistry except Cereal Chemistry A & B		8/8	Compulsory
AGCH5020	Research Project (Cereal Chemistry)	24	Compulsory
AGCH5021	Research Project A(Cereal Chemistry)	16	Compulsory
Cereal Science MAgr only			
AGCH5014	Chemistry and Biochemistry of Grains A	8	
AGCH 5015	Chemistry and Biochemistry of Grains B	8	
AGCH5016	Research Methods and Communication Skills	8	
AGCH 5017	Current Issues in Cereal Science	8	
AGCH 5022	Research Project (Cereal Chemistry)	24	Compulsory
AGCH 5023	Current Issues in Cereal Science A1	4	
AGCH 5024	Current Issues in Cereal Science A2	4	
Other units approved by the Head of Department up to 8 credit points			
Agricultural Entomology			
ENTO 5002	Special Topics in Entomology	8	
ENTO 5003	Taxonomy and Biogeography of Insects	8	Compulsory
ENTO 5004	Insect Ecology (Advanced)	8	
ENTO 5005	Insect Collection	4	
ENTO 5006	Research Methods in Entomology Al	8	Compulsory
ENTO 5007	Research Methods in Entomology A2	8	Compulsory
Other units approved by the Head of Department up to 16 credit points			
Agricultural Genetics			
GENE 5001	Biotechnology	4	
GENE 5003	Cytogenetics and Genetic Manipulation	4	
GENE 5007	Introductory Plant Breeding	4	
GENE 5012	Research Project (Agricultural Genetics) Al	8	Compulsory
GENE 5013	Research Project (Agricultural Genetics) A2	8	Compulsory
ANSC5011	Livestock Genetics	4	
BIOL 3103	Molecular Genetics	12	
Other units approved by the Head of Department up to 24 credit points			
Agronomy			
AGRO5001	Advanced Crop Agronomy	8	
AGRO5002	Advanced Pasture Agronomy	8	
AGRO5003	Crop Physiology (Advanced)	6	Compulsory
AGRO5004	Plant Nutrition (Advanced)	4	
AGRO5005	Readings in Plant Nutrition	2	
AGRO5006	Research Project (Agronomy) or	24	Compulsory
AGRO5007	Research Project A (Agronomy) or	16	Compulsory
AGRO5008	Research Project B (Agronomy)	8	Compulsory
Other units approved by the Head of Department up to 24 credit points			

Code	Unit of study	Credit points	Comment
Animal Science			
ANSC 5002	Animal Genetics (Advanced)	8	
ANSC 5004	Poultry Production (Advanced)	8	
ANSC 5009	Animal Health (Advanced)	8	
ANSC 5010	Pig Production (Advanced)	8	
ANSC 5012	Animal Biotechnology (Advanced)	8	
ANSC 5013	Research Project Al	8	Compulsory
ANSC 5014	Research Project A2	8	Compulsory
ANSC 5015	Special Topics in Animal Science	8	
Other units approved by the Head of Department up to 8 credit points			
Biometry			
BIOM 5001	Advanced Biometry	8	
BIOM 5002	Applied Multivariate Analysis	8	
BIOM 5004	Designing Experiments in Agriculture	8	
BIOM 5005	Statistical Modelling in Agriculture	8	
BIOM 5007	Research Project (Biometry) Al	8	Compulsory
BIOM 5008	Research Project (Biometry) A2	8	Compulsory
Other units approved by the Head of Department up to 24 credit points			
Horticultural Science			
HORT 5005	Research Project A (Horticultural Science)	18	Compulsory for GradDipAgrSc
HORT 5006	Special Topics in Horticultural Science (Advanced)	4	
HORT 5010	Urban Horticulture (Advanced)	4	
HORT 5011	Research Project (Horticultural Science)	24	Compulsory for MAgr
HORT 5012	Flower and Nursery Crops (Advanced)	4	
HORT 5013	Issues in Horticultural Science A	6	
HORT 5014	Issues in Horticultural Science B	6	
HORT 5015	Postharvest Biology and Technology (Advanced)	4	
Other units approved by the Head of Department up to 18 credit points			
Microbiology			
MICR 5001	Microbiology A (Advanced)	12	Compulsory
MICR 5002	Microbiology B (Advanced)	12	Compulsory
MICR 5003	Research Project (Microbiology)	24	Compulsory for GradDipAgrSc
MICR 5004	Special Aspects of Microbiology	8	Compulsory for MAgr
MICR 5005	Research Project (Microbiology) Al	8	
MICR 5006	Research Project (Microbiology) A2	8	
Plant Breeding			
GENE 5001	Biotechnology	4	
GENE 5002	Breeding for the Environment	4	
GENE 5003	Cytogenetics and Genetic Manipulation	4	
GENE 5004	Germplasm Management	4	
GENE 5005	Plant Breeding A	8	Compulsory
GENE 5006	Plant Breeding B	4	
GENE 5008	Quantitative Genetics	4	
GENE 5011	Research Project Additional	4	
GENE 5014	Research Project (Plant Breeding) Al	8	Compulsory
GENE 5015	Research Project (Plant Breeding) A2	8	Compulsory
Other units approved by the Head of Department up to 20 credit points			
Plant Pathology			
CROP 5006	Crop Protection (Advanced)	4	
PPAT 5001	Biol & Control of Viral Bacteria Disease	6	
PPAT 5002	Defence Mechanisms of Plants	6	
PPAT 5004	Research Methods in Plant Pathology A	16	Compulsory for GradDipAgrSc
PPAT 5005	Soil Biology and Biodiversity	6	
PPAT 5006	Special Topics in Plant Pathology	8	
PPAT 5012	Research Methods in Plant Pathology Bl	6	Compulsory for MAgr
PPAT 5013	Research Methods in Plant Pathology B2	6	Compulsory for MAgr
PPAT 5014	Advanced Field and Lab Studies in Plant Disease	6	
Other units approved by the Head of Department up to 16 credit points			

Code	Unit of study	Credit points	Comment
Plant Protection			
CROP 5006	Crop Protection (Advanced)	4	
PPAT 5001	Biol & Control of Viral Bacteria Disease	6	
PPAT 5002	Defence Mechanisms of Plants	6	
PPAT 5003	Taxonomy and Biogeography of Insects	8	Compulsory
PPAT 5005	Soil Biology and Biodiversity	6	
PPAT 5006	Special Topics in Plant Pathology	8	
PPAT 5010	Plant Protection Research Methods Al	8	Compulsory
PPAT 5011	Plant Protection Research Methods A2	8	Compulsory
ENTO 5002	Special Topics in Entomology	8	
ENTO 5004	Insect Ecology (Advanced)	8	
Other units approved by the Head of Department up to 16 credit points			
Soil Conservation			
SOIL 5001	Advanced Methods of Studying and Analysing Soil	6	
SOIL 5003	Chemistry of the Soil Environment	6	
SOIL 5004	Formation, Evaluation and Management of the Soil Resource	8	Compulsory
SOIL 5005	Physical Modelling of the Soil Environment	6	
SOIL 5007	Soil Mineralogy, Pedogenesis and Taxonomy	6	
SOIL 5008*	Soil Properties and Processes	8	Compulsory
SOIL 5009	Strategies for Soil Conservation	10	Compulsory
SOIL 5010	Research Project A (Soils)	8	Compulsory
AGEC5010	Natural Resource Economics (Advanced)	8	Compulsory
Other units approved by the Head of Department up to 16 credit points			
Soil Contamination			
SOIL 5001	Advanced Methods of Studying and Analysing Soil	6	
SOIL 5003	Chemistry of the Soil Environment	6	
SOIL 5004	Formation, Evaluation and Management of the Soil Resource	8	
SOIL 5005	Physical Modelling of the Soil Environment	6	
SOIL 5006	Soil Contamination	10	Compulsory
SOIL 5008*	Soil Properties and Processes	8	Compulsory
SOIL 5011	Research Project (Soils)	16	Compulsory
BIOM 5001	Advanced Biometry	8	
Other units approved by the Head of Department up to 12 credit points			
Soil Science			
SOIL 5001	Advanced Methods of Studying and Analysing Soil	6	
SOIL 5002	Advanced Pedology	6	
SOIL 5003	Chemistry of the Soil Environment	6	
SOIL 5004	Formation, Evaluation and Management of the Soil Resource	8	
SOIL 5005	Physical Modelling of the Soil Environment	6	
SOIL 5007	Soil Mineralogy, Pedogenesis and Taxonomy	6	
SOIL 5008	Soil Properties and Processes	8	Compulsory
SOIL 5010	Research Project A (Soils)	8	Compulsory
SOIL 5011	Research Project (Soils)	16	Compulsory
Other units approved by the Head of Department up to 24 credit points			
Turf Management			
CROP 5001	Turf Management	6	Compulsory
CROP 5002	Advanced Turf Management	8	Compulsory
CROP 5003	Turf Species and Varieties	4	Compulsory
CROP 5004	Applied Plant Ecology	4	Compulsory
CROP 5010	Turf Nutrition	4	Compulsory
CROP 5011	Research Project 1 (Turf)	10	Compulsory
CROP 5012	Research Project 2 (Turf)	10	Compulsory
CROP 5013	Research Project Al (Turf)	6	Compulsory
CROP 5014	Research Project A2 (Turf)	6	Compulsory
AGEC 5020	Business Topics in Turf Management	4	Compulsory alternate years
BIOM 5003	Data Management	4	Compulsory
CROP 5005*	Irrigation Science	4	
CROP 5009	Diagnostic Methods in Turf Management	2	
PPAT 5005*	Soil Biology and Biodiversity	6	
SOIL 5008*	Soil Properties and Processes	8	
Other units approved by the Head of Department up to 8 credit points			
Note: MAgr48 credit points total; GradDipAgrSc 48 credit points total			

*Available subject to background knowledge and availability of facilities.

Table of units of advanced study - MAgr (Agricultural Economics) and GradDipAgrEc

Code	Unit of study	Credit points	Comment
AGEC 5001	Research Project A	16	Mutually exclusive
AGEC 5002	Research Project B	8	
AGEC 5003	Agribusiness Management (Advanced)	8	
AGEC 5004	Agricultural and Resource Policy (Advanced)	8	
AGEC 5005	Applied Commodity Modelling (Advanced)	8	
AGEC 5006	Applied International Trade (Advanced)	8	
AGEC 5007	Applied Marketing (Advanced)	8	
AGEC 5008	Commodity Price Analysis (Advanced)	8	
AGEC 5009	Contemporary Issues in Agricultural Economics	4	
AGEC 5010	Natural Resource Economics (Advanced)	8	
AGEC 5011	Production Economics (Advanced)	8	
AGEC 5012	Quantitative Business Management and Finance (Advanced)	8	
AGEC 5014	Exploitation and Conservation of Natural Resources	8	MAgr only
AGEC 5015	Applied Commodity Modelling PG (Advanced)	4	
AGEC 5016	Research Methods (Advanced)	4	
AGEC 5023	Special Topics in Agricultural and Resource Economics (Advanced)	8	MAgr only
ECMT 3020	Applied Econometrics	8	MAgr only
ECMT 5002	Econometric Applications	8	
ECMT 5001	Econometric Theory	8	
ECMT 6901	Econometric Modelling	8	MAgr only
ECON	Economics (Level 3 unit)	8	MAgr only
ECON 3030	Forecasting for Economics and Business	8	MAgr only
ECON 5002	Macroeconomics Theory	8	
ECON 6002	Macroeconomics Analysis	8	
ECON 5001	Microeconomics Theory	8	
ECON 6001	Microeconomics Analysis	8	
ECON 6003	Mathematical Methods of Economic Analysis	8	MAgr only
Other units approved by the Head of Department up to 16 credit points			
Note: MAgr48 credit points total; GradDipAgrEc 48 credit points total.			

Table of units of advanced study-APEC MSDevel

Code	Unit of study	Credit points	Comment
APEC 5001	Economics of Sustainable Resource Use	4	
APEC 5002	Environmental Decision Making	4	
APEC 5003	Environmental Law and Policy	4	
APEC 5004	Research Project (Field Study and Thesis)	20	
APEC 5101	Environmental Management Systems and Auditing	4	
APEC 5102	Theory and Practice of Sustainable Development	4	
APEC 5201	Land Use Management and Conservation	4	
APEC 5202	Urban Environmental Management	4	
Note: APECMSDevel 48 credit points total.			

CHAPTER 5

Units of advanced study

Agricultural Chemistry and Cereal Chemistry

AGCH 5001 **Chem & Biochem of Biol Macromolecules A**
8 credit points
Offered: February.
See AGCH 5004

AGCH 5002 **Chem & Biochem of Biol Macromolecules B**
8 credit points
Offered: July.
See AGCH 5004

AGCH 5003 **Chem & Biochem of Biol Macromolecules C**
4 credit points
Offered: February.
See AGCH 5004

AGCH 5004 **Chem & Biochem of Biol Macromolecules D**
4 credit points
Offered: July.
Lectures and laboratory classes including material on the physical behaviour of natural macromolecules and the structure and function of polysaccharides, proteins and nucleic acids. The 8 credit point units will include additional material on the mechanism of enzyme action, the chemistry and biochemistry of nucleic acids and gene expression, and the regulation of metabolism.

AGCH 5005 **Meth of Analysis of Agr and Food Prods A**
8 credit points
Offered: February.
See AGCH 5008

AGCH 5006 **Meth of Analysis of Agr and Food Prods B**
8 credit points
Offered: July.
See AGCH 5008

AGCH 5007 **Meth of Analysis of Agr and Food Prods C**
4 credit points
Offered: February.
See AGCH 5008

AGCH 5008 **Meth of Analysis of Agr and Food Prods D**
4 credit points
Offered: July. Classes: July.
These units(AGCH 5005, 5006, 5007, 5008) teach the theory and practice of advanced analytical techniques for measuring the quality of agricultural products and the environment. They consist of laboratory analyses of the compounds in food that are important in nutrition, as well as procedures for assessing the quality of food, soil and water with respect to residues of agricultural chemicals. Exercises using computer simulation will be included to model processes of environmental chemistry and the factors affecting the persistence of some compounds.

AGCH 5009 **Cereal Chemistry A**
8 credit points
Offered: February.
See AGCH 5012

AGCH 5010 **Cereal Chemistry B**
8 credit points
Offered: July.
See AGCH 5012

AGCH 5011 **Cereal Chemistry C**
4 credit points
Offered: February.
SeeAGCH-5012

AGCH 5012 **Cereal Chemistry D**
4 credit points
Offered: July.
Lectures and practical classes on the uses of various cereal, legume and oil-containing seeds including descriptions of the chemical structures, location, properties, isolation and analysis of commercially significant components such as proteins, polysaccharides and lipids as well as harmful substances, such as enzyme inhibitors, alkaloids, mycotoxins.

AGCH 5013 **Research Methods in Ag & Bio Chemistry**
8 credit points
Offered: February.
This unit deals with recent developments in experimental techniques and analytical methods in agricultural and biological chemistry. Candidates prepare discussion papers and short essays (of approximately 1000 words) on topics of their choice, selected from a reading list which covers a wide range of basic and applied areas of biological chemistry.

AGCH **5018** **Research Project (Agricultural Chem)**
24 credit points
Offered: Full Year (starts Feb).
See AGCH 5021

AGCH 501**9** **Research Project A (Agricultural Chem)**
16 credit points
Offered: Full Year (starts Feb).
See AGCH 5021

AGCH 5020 **Research Project (Cereal Chemistry)**
24 credit points
Offered: Full Year (starts Feb).
See AGCH 5021

AGCH 5021 **Research Project A (Cereal Chemistry)**
16 credit points
Offered: Full Year (starts Feb).
Candidates either undertake a program of extended laboratory experiments in biological chemistry and analyses of food and agricultural products or they elect to carry out a short research project in close association with a member of the academic staff. Projects are usually available in one of the following areas of research interest within the Department of Agricultural Chemistry and Soil Science: carbohydrate and nitrogen metabolism in a variety of crop plants; symbiotic nitrogen fixation; biochemistry of herbicides and pesticides; nutritional aspects of seed proteins; organic and inorganic residues in agricultural products.

Cereal Science

To enable employees in the cereal industries to upgrade their knowledge of cereal constituents and enhance their analytical, problem-solving and communication skills.

AGCH 5014 **Chemistry and Biochemistry Grains A**
8 credit points
Department of Agricultural Chemistry and Soil Science
Offered: February, July. **Assessment:** examination, assignment, reports on lab work.
Material covered in this unit will include some or all of reading program, intensive lecture program, regular lecture program and laboratory work. Areas covered will include the chemistry and biochemistry of carbohydrates, amino acids and proteins, and fatty acids and lipids in grains; the relationship of the chemical characteristics of these compounds and anti-nutritional and toxic compounds to end uses in foods, feeds and other processed products; and laboratory exercises including sample preparation, chemical and biochemical analysis using a range of chromatographic, electrophoretic, spectroscopic and enzymic methods.

AGCH 5015 **Chemistry and Biochemistry Grains B**
8 credit points
Offered: February, July. **Assessment:** one written assignment, reports on lab work.
See AGCH 5014

AGCH 5016 **Research Methods & Communication Skills**
8 credit points
Offered: Full Year (starts Feb). **Assessment:** essay, oral presentation.
Students will attend a 3-day workshop, or a series of 3-hour sessions, on research methodology and oral and written scientific communication. Subsequently, they will research the literature and prepare an essay of approximately 5000 words and a 20-minute oral presentation on separate topics of their choice selected from a list which covers basic and applied aspects of cereal science.

AGCH 5022 **Research Project (Cereal Science)**
24 credit points
Offered: Full Year (starts Feb).
Students will complete a short research project which may be undertaken in their place of employment if suitable facilities are available. Each student will be assigned an academic supervisor from the Department of Agricultural Chemistry and Soil Science who will visit the site where the work will be performed, and assist in the planning of the project, provide advice during the work, and supervise the preparation of oral and written reports. Students should discuss prospective projects with the Degree Coordinator as soon as possible after enrolment. The project would normally be completed within 2-3 years.

AGCH 5023 **Current Issues in Cereal Science A1**
4 credit points
Offered: February. **Assessment:** symposium presentation, one review paper.
Students will participate with invited speakers in a symposium on topical issues in the grains industry. In addition to giving their oral presentation, students will prepare a review paper on one of the issues covered.

AGCH 5024 **Current Issues in Cereal Science A2**
4 credit points
Offered: July. **Assessment:** See AGCH 5023.
See AGCH 5023

Agricultural Economics

AGEC 5001 **Research Project A (Ag Economics)**
16 credit points
Offered: Full Year (starts Feb). Assessment: Thesis.
In this unit of study, students develop skills in economic research by designing, undertaking and reporting on a research project. Students undertake research on an approved topic under the supervision of a member of staff and prepare a report of approximately 25,000 words in length.

AGEC 5002 **Research Project B (Ag Economics)**
8 credit points
Offered: Full Year (starts Feb). Assessment: Thesis.
In this unit of study, students develop skills in economic research by designing, undertaking and reporting on a research project. Students undertake research on an approved topic under the supervision of a member of staff and prepare a report of approximately 10,000 words in length.

AGEC 5003 **Agribusiness Management (Advanced)**
8 credit points
Offered: February. Classes: (3 lee & 2 workshop)/wk.
The unit is designed to introduce the economic principles and techniques of business management as they apply to farm and agribusiness firms. The topics covered will include: management goals and objec-tives; budgeting; gross margins analysis; parametric budgeting; sources of management information and its analysis; simple systems simulation; applications of linear programming to farm and agribusiness planning; financial management; risk in planning and management; cash, credit, debt and taxation management; evaluation of investment and firm growth alternatives; acquisition and transfer of assets; the role of financial institutions in the rural credit market.

An integrated set of workshops is used to provide practical experience in firm planning utilising budgeting, gross margins analysis, linear programming, simulation methods and other techniques of analysis.

AGEC 5004 **Agricultural & Resource Policy Advanced**
8 credit points
Offered: July. **Classes:** (3 lee & 1 tut)/wk. **Assessment:** one 3hr exam, assignments.
The topics discussed include: basic theoretical frameworks for economic evaluation of policy formation (including Pareto welfare economics and public choice theory), market and government failure; the institutional structure of agricultural and resource policy formulation in Australia; microeconomic issues in agricultural and resource policy; and issues arising from linkages between agriculture and the resource industries and with the rest of the economy. Students will be expected to read widely.

AGEC 5005 **Applied Commodity Modelling (Advanced)**
8 credit points
Offered: February. Classes: (3 lee & 1 tut/lab session)/wk.
Assessment: one 1.5hr exam, one 1.5hr prac exam, assignments.
The application of methods of data analysis to the agricultural and resource sectors is the focus of this unit. Topics covered will include: formulation and econometric estimation of production relationships; demand; supply; expectations models and simple simultaneous representations of commodity sectors; time series forecasting applied to commodity and futures markets; and a suitable selection from an introduction to dynamic multipliers, dynamic elasticities, and econometric simulation. Use will be made of a variety of data analysis and econometric computer packages. Emphasis will also be placed on electronic and graphical approaches to data analysis along with consideration of the limitations and problems of the particular techniques.

AGEC 5006 **Applied International Trade (Advanced)**
8 credit points
Offered: February. **Classes:** (3 lee & 1 tut)/wk. **Assessment:** one 3hr exam, assignments.
The basic economic principles underlying international trade in agricultural and resource commodities and the policies involved will be presented. Issues related to trade and development will also be considered. The main topics covered will include: trends in agricultural and resources trade; trade policies of importing and exporting nations, including issues such as food aid and surplus disposal programs; economic integration and impacts on international commodity trade; international trade policy making, including GATT and WTO; the impact of exchange rates and other macroeconomic variables on international trade in commodities.

AGEC 5007 **Applied Marketing (Advanced)**

8 credit points

Offered: July. **Classes:** (3 lee & 1 tut/excursion)/wk. **Assessment:** one 3hr exam, assignments.

This unit will provide an understanding of the operation and principles of marketing, with practical applications focused on the food and fibre markets. The main topics covered will include: firm-level marketing mix and marketing strategy decision making; marketing management and planning; market research and information; futures markets and other risk sharing devices. The unit will also address the organisation and trends of food and fibre marketing in Australia; food and fibre industrial marketing, including value-adding and power in the supply chain; market efficiency, and international marketing by agribusiness firms.

AGEC 5008 Commodity Price Analysis (Advanced)

8 credit points

Offered: February. **Classes:** (3 lee & 1 tut)/wk. **Assessment:** one 3hr exam, classwork and assignments.

This unit is focussed on the analysis of prices, pricing mechanisms and the operations of markets for agricultural and resource commodities and products. Topics include technical vs fundamental analysis of prices; constructing price indexes; the theoretical foundation of consumer demand functions; theoretical relationships and empirical evidence concerning demand elasticities; aggregate supply relationships under perfectly and imperfectly competitive markets; equilibrium price determination in competitive markets; pricing by oligopolies and monopolies; structure, conduct and performance in industry; formulating structural models of commodity markets; reduced form models; partial and total elasticities; marketing services and marketing margin relationships; modelling expectations and other aspects of market dynamics; impact and dynamic multipliers; spatial markets and spatial pricing; product characteristics and hedonic price relationships. Applied examples from domestic and international agricultural and resource industries will be used.

AGEC 5009 Contemporary Issues in Agr Economics Adv

4 credit points

Offered: February, July. **Classes:** (2 lec)/wk. **Assessment:** one 2 hr exam, assignments.

A seminar series designed to provide students with a broad overview of current issues affecting the agricultural and resource industries. Seminars will cover the appraisal of current Australian agricultural and resource industry policy and international issues affecting Australia's agricultural and resource industries.

AGEC 5010 Natural Resource Economics (Advanced)

8 credit points

Offered: July. **Classes:** 3 lee & 1 tut/lab)wk. **Assessment:** one 3hr exam, assignments.

A unit in natural resource economics of relevance to agriculture and the resource industries. Issues discussed are: the environment as a source of environ-mental services; socially efficient resource allocation and Pareto welfare economics; market failure and characteristics of environmental services; benefit cost analysis of public projects, including the modification of environmental services; non-depletable resources and pollution; depletable resources; irreversibility; sustainability. Applications include land degradation, fisheries, forestry, land-use planning and greenhouse effect

AGEC 5011 Production Economics (Advanced)

8 credit points

Offered: July. **Classes:** (3 lee and 2 workshops)/wk. **Assessment:** one 1.5hrexam, one 1.5hrprac exam, assignments.

This unit has two components. The first focuses on the analysis of production based on neoclassical production functions. Topics include: graphical and mathematical representation of process level and aggregate production relationships; factor-product, factor-factor and product-product problems; optimal resource allocation in unconstrained and constrained situations; shadow prices of resources; factor demand and product supply equations, cost and profit functions; duality theory; economies of scale, size and scope; technical, allocative and economic efficiency and their assessment; time in production; modelling and measuring productivity and technical change. The second part focuses on linear activity analysis. Topics include basic input-output analysis and elements of linear programming. Graphical and mathematical representation of linear constrained optimization models; primal and dual solutions; post-optimality analysis; parametric programming.

AGEC 5012 Quant Business Management & Finance Adv

8 credit points

Offered: February. Classes: (3 lee & 1 tut/lab session)/wk.

Assessment: one 3hr exam, assignments.

The application of applied optimising methods to decision-making in the agricultural and resource sectors is the focus of this course. Topics covered include: an overview of the applications of optimising models; linear, quadratic and nonlinear programming; queueing theory; inventory models; replacement models; agricultural sector models; transport and location models; spatial equilibrium systems; input-output analysis and compatable general equilibrium models; and model validation and verification. Issues of financial analysis and control, financial relationships, investment, capital budgeting, risk management and risk in investment decision making will also be covered.

AGEC 5014 Exploit & Conservation Natural Resources

8 credit points

Offered: February, July. **Classes:** (1 tut/wk). **Assessment:** one 2hr exam, assignments, term paper.

Concepts of economic optimal use of natural resources over time. Efficiency and equity considerations. Dynamic modelling of biological populations including forestry, fisheries and predator-prey systems, and physical environmental models including the atmosphere and river systems. Mathematical methods including dynamic programming, optimal control theory and stochastic optimisation for determining optimal exploitation strategies of renewable and non-renewable natural resources. Competitive firm, monopolistic firm and industry models. Resource pricing.

Textbooks

J.M Conrad and C.W.Clark Natural Resource Economics: Notes and Problems (Cambridge Press 1987)

P.A. Neher Natural Resource Economics: Conservation and Exploitation (Cambridge Press 1990)

AGEC 5015 Applied Commodity Modelling (Advanced)

4 credit points

Offered: February. **Classes:** (2 lee & 1 tut/lab)/wk. **Assessment:** one 1 hr exam, 1 hr prac exam, assignments.

The unit focuses on the concepts and basic procedures of regression analysis and the application of these methods to the analysis of economic data in the agricultural and resource sectors. Review of concepts of estimation and hypothesis testing. Simple regression model. Estimation and testing under classical assumptions. Multiple regression models and ordinary least squares estimation and testing under classical assumptions. Dummy variables. Lag variables. Deterministic model mis-specification. Single vs simultaneous equation models. Uses and limitations of graphical data analysis. Common departures from classical assumptions, their implications for estimation and improved methods of estimation. Students will learn the concepts and methods and develop skills in formulating and estimating models.

Textbooks

R.S. Pindyck and D.L. Rubinfeld Econometric Models and Economic Forecasts (McGraw-Hill, 1997)

Reference

K. White et al SHAZAM User's Reference Manual (McGraw-Hill, 1997)

AG EC 5016 **Research Methods (Advanced)**
4 credit points
Offered: July. **Classes:** (3 lee, 1 lab)wk for 6 weeks. **Assessment:** onel .5hr exam, assignments.

This unit deals with the nature of research and inquiry in applied economics. Topics covered will include: alternative philosophical perspectives on inquiry; scientific method; inductive thought and and deductive logic; creativity; research as an orderly process of enquiry; preparation of research proposals; secondary data sources for agricultural and resource economists; collection of primary data; statistical design of sample surveys; questionnaire construction; interviewing techniques; and methods of analysis of survey data. Topics are illutsrated with examples of research in theoretical economics, empirical discipline-advancing research, empirical exploratory research, and research using policy-evaluation modelling.

Textbooks

J. A. Sharp and K. Howard The Management of a Student Research Project 2nd edn (Gower Publishing, 1996)

P. Phelan and P. Reynolds Argument and Evidence (Roudedge, 1996)

Reference books

G.L. Johnson Research Methodology for Economists: Philosophy and Practice (Macmillan, 1986)

C.A.Moser and G.Kalton Survey Methods in Social Investigation 2nd edn (Heinemann, 1971)

AGEC 5020 **Business Topics in Turf Management**
4 credit points
Offered: July. **Assessment:** one 2hr exam, assignments, class work, term paper.

This unit involves a minimum of 25 hours of formal lectures and practical classes with additional directed reading of relevance to particular student groups. The unit will focus on the management economics of organisations providing market-priced and non-priced services such as recreation. Topics may include market assessment and marketing strategies, pricing strategies, financial planning and control, and resource management.

AGEC 5023 **Spec Topics Agr/Resource Economics (Adv)**
8 credit points
Offered: February, July. **Assessment:** one exam, assignments and/or essays.

This unit deals with specialised areas of agricultural or resource economics of particular interest to approved students. Examples could include economics of agricultural transport, advanced production economics and agricultural household studies. The student will read under the guidance of staff and complete designated learning tasks.

Agronomy

AGRO5001 **Advanced Crop Agronomy**
8 credit points
Dr Jacobs
Offered: February. Assessment: one 3hrexam, review paper.

A field-based unit on crop management with particular reference to grain legume and fibre crops. Analyses will be in the context of (i) their ecology, underlying physiology and nutrition; (ii) their farming system, including technical and economic analysis of their management and their roles and restrictions within existing and imaginable fanning systems; and (iii) their end uses, and how to better meet the technical needs of markets. Remote sensing and geographic information systems technology are used to monitor crop area and production, computer-based decision support systems to assist crop management, and professional diagnosis of hypothetical problems in crop production to develop analytical skills.

The unit involves two field trips. The first, of five days, begins in the first week of February Semester. This allows study of two crops. A second field trip is organised to research broader issues of management of traditional and alternative field-crop ecosystems identified by students.

AGRO5002 **Advanced Pasture Agronomy**
8 credit points
Dr Jacobs
Offered: February. Assessment: one 2hr exam, assignments.

Identification of management problems relating to pastures within fanning systems; grassland measurement; improvement of farm performance; plant adaptation and management of plant competition. Principles of grassland ecology; taxonomy and identification of important grasses and legumes.

AGRO 5003 **Crop Physiology (Advanced)**
6 credit points
Dr Jacobs
Offered: February. Assessment: one 2hr exam, assignments.

This unit examines the physiology of plants important in agriculture. The impact of environment and management on photosynthesis, respiration, water relations and plant development will be discussed in relation to the formation of grain or forage, and the quality of major crop and pasture species. The use of instrumentation to measure the physiological responses of plants to stress will be featured in practical sessions.

AGRO 5004 **Plant Nutrition (Advanced)**
4 credit points
Dr Campbell
Offered: February. Assessment: one 3hr exam, assignments.

This course examines how plants acquire nutrients and distribute nutrients between organs during growth. Nutrient function, nutrient genotype interactions and diagnosis of nutrient deficiencies/toxicities are intenelated concepts. Other topics include: prediction of macronutrients and micronutrient requirements; legume nutrition; heavy metals; environmental considerations, - eg, leaching of nitrate. Practical classes deal with diagnostic techniques.

AGRO 5005 **Readings in Plant Nutrition**
2 credit points
Dr Campbell
Offered: February, July. **Assessment:** essay.

The unit offers the student the opportunity to read extensively in an area of plant nutrition. Discussions are held to guide students in synthesising the knowledge gained in the chosen topic.

AGRO 5006 **Research Project (Agronomy)**
24 credit points
Offered: Full Year (starts Feb).
See AGRO 5008

AGRO 5007 **Research Project A (Agronomy)**
16 credit points
Offered: Full Year (starts Feb).
See AGRO 5008

AGRO 5008 **Research Project B (Agronomy)**
8 credit points
Offered: Full Year (starts Feb).

Candidates will conduct and report on a well-defined investigation into an area of interest in agronomy.

Animal Science

ANSC 5002 **Animal Genetics (Advanced)**
8 credit points
Asso. Prof. Nicholas, Assoc. Prof. Moran
Offered: February. **Classes:** (3 lee & 1 prac)/wk. **Assessment:** one 3hr exam, assignments.

A series of lectures and practical classes providing a firm basis in population and quantitative genetics, leading to more advanced applications in animal breeding. Single-locus population genetics theory, including the theory of selection and random drift, precedes the exposition of quantitative theory, including partitioning of phenotypic and genetic variances and parameter estimation.

Selection indexes (both single trait and multi-trait) are dealt with extensively and BLUP (Best Linear Unbiased Prediction) is discussed. Practical classes are based on computer simulation or analysis of illustrative data. Excursions illustrate the applications of genetics in commercial and research settings.

ANSC 5004 **Poultry Production (Advanced)**

8 credit points
Assoc. Prof. Balnave
Offered: February. **Assessment:** one 3hr exam.
Avian biology, with emphasis on the unique features of the digestion, absorption and utilisation of nutrients, and on the physiology of egg formation. Commercial production of broilers and table eggs, with consideration of environmental requirements, housing and disease control.

ANSC 5009 **Animal Health (Advanced)**

8 credit points
Offered: July. **Classes:** (3 lee & **1** tut)/wk. **Assessment:** one 3hr exam.
Biology and immunology of host responses to infectious and parasitic diseases; definition of general disease states; examination of several livestock diseases of major economic significance; the development of livestock management programs which minimise the occurrence of or eradicate the above diseases; the use of commercial biological and chemical products to control animal health.

ANSC 5010 **Pig Production (Advanced)**

8 credit points
Assoc. Prof. Bryden
Offered: July. **Assessment:** one 3hr exam, assignments.
A series of lectures and practical classes with emphasis on the efficiency of pig meat production. All aspects of the production cycle are covered including management of the breeding sow and growing pig. Environmental requirements, housing, feeding practices and disease control are considered. Application of computer-based models to commercial piggeries.

ANSC 5011 **Livestock Genetics**

4 credit points
Assoc. Prof. Nicholas, Assoc. Prof. Moran
Offered: February.
Lectures in livestock genetics with special emphasis on the genetic basis of animal disease.

ANSC 5012 **Animal Biotechnology (Advanced)**

8 credit points
Assoc. Prof. Moran, Dr Taylor, Assoc. Prof. Nicholas, Dr Thomson
Offered: February. **Classes:** (3lec & 1tut)/wk. **Assessment:** one 3hr exam, assignments.
A series of lectures, tutorials and supervised reading and computer aided instruction covering the application of biotechnology to animal productivity, disease control, the development of new products from domestic animals and the impact of microorganism and plant biotechnology on animals. Included are molecular genetics, cell biology and recombinant DNA technology, in principle and application; the techniques and outcomes of genetic mapping and genomics in gene discovery; techniques and outcomes of transgenesis, including nuclear transfer, knockout mutagenesis and production of human pharmaceutical proteins; gene therapy for modulating tissue function and repair of inherited and acquired defects; production and use of recombinant proteins; bioinformatics, including techniques for storing, retrieving and analysing molecular and genomic information; intellectual property protection; risks and benefits; ethical implications of biotechnology.

ANSC 5013 **Research Project (Animal Science) A1**

8 credit points
Offered: February.
Candidates will conduct and report on a well-defined investigation into an aspect of animal production.

ANSC 5014 **Research Project (Animal Science) A2**

8 credit points
Offered: July.
See ANSC 5013

ANSC 5015 **Special Topics in Animal Science**

8 credit points
Offered: February, July.
This unit deals with specialised areas of particular interest to each candidate.The unit of study may include tutorials, seminars, essays and directed reading on selected topics.

APEC Master of Sustainable Development

APEC 5001 **Economics of Sustainable Resource Use**

4 credit points
Professor Gordon MacAulay, Department of Agricultural Economics, University of Sydney
Offered: February, July. **Classes: (26** hrs lee **&** tut). **Assessment:** 2 hr exam, assignments.
This unit examines the economics of sustainable development and the use of resources. The course also aims to expose students to the economic theories and strategies underpinning the trade liberalisation and sustainable economic growth policies pursued by APEC. Areas covered in this unit include issues relating to the nexus between economic activity and the natural environment, non-depletable and depletable resources and the dynamics of market forces and their impact on the principles and practice of sustainable development. Other areas which may be covered include theories relating to the nature of economic development, the theories of supply and demand, price and decision theory, welfare theory, cost-benefit analysis, economics of land use, savings and investment, economic policies, labour markets, differing needs of developed and developing economies and policy mechanisms for sustainable resource use. Emphasis will be on the topics that help students develop a sound understanding of economics for decision-making.
Textbooks
Tietenberg, T. (1992), Environmental and Natural Resource Economics, Harper Collins.
Worster, D. (1994) Nature's Economy: A History of Ecological Ideas, 2nd edition, Cambridge University Press, Cambridge.
Common, M (1995) Sustainability and Policy: Limits to Economics, Cambridge University Press, Cambridge.
James, D. (ed) (1994) The Application of Economic Techniques in Environmental Impact Assessment, Kluwer, Dordrecht.
Morton, G.A. (1984) Resource Economics, Edward Arnold, London.
Goldin I. and L.A. Winters (1995), The Economics of Sustainable Development, Cambridge University Press, Cambridge.

APEC 5002 **Environmental Decision Making**

4 credit points
Professor Jim Petrie and Dr Cynthia Mitchell, Department of Chemical Engineering, University of Sydney
Offered: February, July. **Classes:** (26 hrs of lee and tut).
Assessment: case study analyses and report writing.
The ability to make good environmental decisions is confounded by the range of issues which need to be considered, the wide range of stakeholders involved, and uncertainties in the information available to support the decision. The task of bringing all this together in a structured manner, ensuring the clear identification of decision objectives, and the criteria by which the value of possible decision outcomes will be assessed, poses both academic and practical questions, and is worthy of a course of study.
This course will consider, from a "Systems" perspective, the practice of environmental decision making, the tools and approaches used in problem structuring and decision analysis, and the evaluation of decision outcomes. A specific focus will be where there are multiple objectives to be satisfied, including the exploration of trade-offs between environmental, economic, and social objectives. The course will explore the use of "Life Cycle

Thinking" to guide the scope of decision analysis, providing the spatial and temporal boundaries which define the decision space.

Case studies will come from Environmental Impact Assessment - both strategic and project-level, Life Cycle Assessment, and Risk Management.

Textbooks

Jackson, T (1996) "Material Concerns - Pollution, Profit and Quality of Life", Routledge Press, London

Society for Environmental Toxicology and Chemistry (1993) "A Conceptual Framework for Life Cycle Impact Assessment", SETAC Foundation for Environmental Education, U.S.A

Janssen, R (1994) "Multi-Objective Decision Support for Environmental Management", Kluwer Academic Publishers, the Netherlands

Beinat, E (1997) "Value Functions for Environmental Management", Kluwer Academic Publishers, the Netherlands

Ayres, R.U and L.W. Ayres (1996) "Industrial Ecology - Towards Closing the Materials Cycle", Edward Elgar Press, England

APEC 5003 **Environmental Law and Policy**

4 credit points

Professor Ben Boer and colleagues, Law School, University of Sydney

Offered: February, July. Classes: (26 hrs seminar). Assessment: Essay, in-class examination and class participation.

The aim of this unit is to introduce students to environmental law and policy in the Asia Pacific region, including Australia. The unit introduces students to the legal and institutional implications of adopting the concept of ecologically sustainable development (ESD), particularly for governments and corporations. It discusses the ethical implications of ESD, followed by an exploration of its implications for regulation and accountability in various fields, including land-use planning, pollution control, and natural and cultural heritage conservation. Decision-making mechanisms such as environmental impact assessment, the role of public participation, avenues of accountability in the administrative, civil and criminal sphere and forums such as environmental courts and tribunals are a focus. Emphasis is also given to the role of international and regional organisations in the development of environmental law in the region, including the Asia Pacific Economic Cooperation Forum, the United Nations Environment Program, the United Nations Development Program, the World Conservation Union, the Association of South East Asian Nations (ASEAN), the South Pacific Regional Environment Program and the South Asian Cooperative Environment Program.

Textbooks

Law School, University of Sydney, Environmental Law and Policy Readings (unpublished).

United Nations Environment Program (1997), UNEP Environmental Law Training Manual, United Nations Environment Program, Nairobi.

Boer, B; Ramsay, R; and Rothwell, DR (1988), International Environmental Law in the Asia Pacific, Kluwer Law International, Sydney.

APEC 5004 **Research Project**

20 credit points

Supervisor(s) from participating institutions

Offered: February, July. Assessment: Development of a field study outline (plan) and 10,000 word minor thesis.

Students will be required to undertake a research project that will involve a study that combines issues and problems faced in their home economy and their impact on the sustainable development agenda of the Asia-Pacific region. The study will involve working in collaboration with the public and private sectors and will be based on theoretical and practical aspects of sustainable development. Students will need to produce a field study plan and conduct practical activities such as surveys, interviews and information gathering. The field study exercise will be conducted over a period of 4 months and lead to the production of a minor thesis. The University of Sydney will offer the research project and students will receive supervisory support from institutions participating in the program.

APEC 5101 **Environ'tal Manage't System & Auditing**

4 credit points

Mr Robert Pagan, University of Queensland

Offered: February, July. Classes: (26 hrs lee & tut). Assessment: Case study analysis and audit report writing.

This unit examines the theory and practice of developing an Environmental Management System (EMS) and the methods of conducting environmental audits. The EMS component of the subject is structured around international standards BS7750 and IS014000. The environmental auditing component is based on the need to comply with environmental duties and responsibilities that compromise a "quality system". Auditing is a technique for reviewing and maintaining that system and ensuring compliance with it. Case studies are used to illustrate "best practice".

APEC 5102 **Theory & Practice: Sustainable Develop't**

4 credit points

Professor Tor Hundloe,University of Queensland

Offered: February, July. Classes: (26 hrs lee & tut). Assessment: One research paper and class presentation.

This unit examines the inter-relationship between the disciplines of ecology, economics, social sciences and moral philosophy. It aims to familiarise students with the history of sustainable development and an understanding of how it differs from earlier concepts of environmental protection and management. The unit also aims to develop a sound theoretical basis of the integrating disciplines. Students will be exposed to the frameworks that allow for the integration of the disciplines that form the foundation for practical application of sustainable development. The unit will look at the theories of development, the ecological, economic and social/cultural conceptualisation of sustainability, the ideas of ethics, the practical tools for adopting the framework for sustainable development, the global, regional and local dimensions of sustainable development and, the management and policy responses.

Textbooks

World Commission on Environment and Development (1997) Our Common Future, Oxford University Press, Oxford.

Common, M (1995) Sustainability and Policy: Limits to Economics, Cambridge University Press, Cambridge.

Diesendorf, M. and Hamilton, C. (eds) (1997), Human Ecology, Human Economy, Allen & Unwin, Sydney.

Meadows, D.H., Meadows, D.L. & Randers, J. (1992) Beyond the Limits, Earthscan, London.

Worster, D. (1994), Nature's Economy: A History of Ecological Ideas, 2nd edition, Cambridge University Press, Cambridge.

APEC 5201 **Land Use Management and Conservation**

4 credit points

Dr Phang Siew Nooi, University Malaya

Offered: February, July. Classes: (26 hrs lee & tut). Assessment: oral presentation, research paper, and seminar discussions.

This unit will look at the measures and arrangements for the conservation and enhancement of environmental quality in urban and rural areas. It will review the arrangements affecting the conservation and management of historic the natural and built environments. It will also consider the wider relevance of urban conservation in the development of social and cultural values. The planning and management of recreation provision in urban and rural areas will also be included in the unit.

Textbooks

Graham, H. & Hunter, C. (1994) Sustainable Cities, Cromwell Press, London.

Ronan, P., Morey, J. & Lever, B., (eds) (1995) International Perspectives in Urban Studies, Athenaeum Press, London.

APEC 5202 **Urban Environmental Management**

4 credit points

Dr Phang Siew Nooi, University Malaya

Offered: February, July. Classes: (26 hrs lee & tut). Assessment: oral presentation, report writing, forum discussions.

Urban centres, large and small, exist in all countries that are experiencing rapid rates of urbanisation. Urban centres are important conglomerates of essential and vital services and consti-

tute the major administrative and commercial centres of their country. There are indications to show that the trend of urbanisation in these centres will continue and may cause a strain on the urban environment. The aim of this unit is to examine the urbanisation processes as they impact on the environment. The unit will also focus on the aspects of urban environmental management. Some of the issues that will come under examination include housing, slum and squatter settlements, traffic congestion, urban infrastructure and services, health, planning and management of urban projects, and enhancing revenue resources. The unit will be conducted through a series of forum and panel discussions, on-site visits and briefings on cases.

Textbooks

Ronan, P., Morey, J. & Lever, B., (eds) (1995) International Perspectives in Urban Studies, Athenaeum Press, London.

Jurgen, R., (ed) (1996) The Dynamics of Metropolitan Management in Southeast Asia, ISEAS, Singapore.

Harpham, T & Tanner, M., (eds) (1995) Urban Health in Developing Countries: Progress & Prospects, Earthscan Publication.

Biometry

BIOM 5001 **Advanced Biometry**

8 credit points
Prof. O'Neill
Offered: February. Assessment: one 3hr exam, assignments.
This unit explores experimental design and analysis, using balanced and unbalanced data sets. Examples are taken from current experiments conducted in the Department or the Faculty. It also extends statistical theory to more difficult design problems. Topics here include bivariate distributions, maximum likelihood estimation, likelihood ratio tests.

BIOM 5002 **Applied Multivariate Analysis**

8 credit points
Dr Thomson
Offered: July.
This unit develops methods for analysing several agronomic variables simultaneously, in designed experiments.

BIOM 5003 **Data Management**

4 credit points
Dr Thomson
Offered: February.
This course explores methods for collecting, describing, and analysing biological data from turf management studies. It includes a discussion of biological variability and of simple statistical techniques available for comparing treatments. The course will allow students to understand the concepts of the commonly used statistical techniques they are likely to encounter in the industry.

Practical classes will involve extensive use of personal computers. There will be a general introduction to computers, file management, and standard Windows software. The package Excel will be used extensively for data organisation, plotting and simple analyses. The word processing package Word will also be used for report preparations. Consideration is also given to choice of statistical packages such as Minitab.

BIOM 5004 **Designing Experiments in Agriculture**

8 credit points
Assoc. Prof. O'Neill, Dr Thomson
Offered: February. Assessment: one 2hr exam, assignments.
This unit looks at the principles and techniques underlying the modern statistical approach to designing experiments in agricultural research. Emphasis is placed on students learning how to advise experimenters on design problems, in consultation with Faculty members.

BIOM 5005 **Statistical Modelling in Agriculture**

8 credit points
Assoc. Prof. O'Neill, Dr Thomson
Offered: July. **Assessment:** one 2hrexam, assignments.
This unit looks in depth at how statistical models can be of use in agricultural research. Topics covered include linear and non-linear models, time series methods, and spatial analyses of field experiments.

BIOM 5007 **Research Project (Biometry) A1**

8 credit points
Offered: Full Year (starts Feb).
Candidates will conduct and report on a well-defined investigation into an area of interest in biometry.

BIOM 5008 **Research Project (Biometry) A2**

8 credit points
Offered: February, July.
See Biom5007

Turf Management

AGEC 5020 **Business Topics in Turf Management**

4 credit points
Offered: July. **Assessment:** one 2hr exam, assignments, class work, term paper.
This unit involves a minimum of 25 hours of formal lectures and practical classes with additional directed reading of relevance to particular student groups. The unit will focus on the management economics of organisations providing market-priced and non-priced services such as recreation. Topics may include market assessment and marketing strategies, pricing strategies, financial planning and control, and resource management.

CROP 5001 **Turf Management**

6 credit points
Dr Martin
Offered: February. **Classes:** February. **Assessment:** one 3hrexam, assignments and prac exercises.
Lectures, workshops and field visits centred on the theme of eturf: a self-contained system'. Students will address the scientific issues underlying the design, construction, grassing and maintenance of turf facilities: construction of desired soil profiles; structure, nutrition and drainage of soils under turf management; the micro- and macroenvironment of turf; water management and physiology of growth under turf conditions.

CROP 5002 **Advanced Turf Management**

8 credit points
Dr Martin
Offered: July. **Prerequisite:** CROP 5001 Turf Management.
Classes: July. **Assessment:** one vive voca exam (1 hr), assignments and prac. exercises.
Lectures, discussions and practical experiments to gain advanced expertise in laboratory and field aspects of the plant sciences underlying turf management. Topics include germination and establishment, stress physiology, irrigation and water use, root growth, growth analysis, canopy photosynthesis, fertilizer and pesticide management, environmental legislation and emerging issues for turf management.

CROP 5003 **Turf Species and Varieties**

4 credit points
Mr King, Dr Martin
Offered: July. **Assessment:** one 2hr theory exam, prac exam, plant collection.
This unit, which is given as intensive workshops, has three aims: to provide an overview of plant variation, ecotypic differentiation and taxonomy; to teach skills in plant identification (use of botanical terminology and use of conventional and vegetative taxonomic keys); and to recognise commercially-important turf species and varieties and weeds. Information is also provided on biochemical methods of identifying grasses; develop-ment of new cultivars by breeding and/or selection; comparative testing of grasses: plant variety rights and cultivar registration.

CROP 5004 **Applied Plant Ecology**
4 credit points
Dr Smith, Dr Martin
Offered: July. Assessment: one 3hr exam, assignments and an individual seminar.

Aspects of plant protection and their effects on the environment.' Interaction between weeds, pests and diseases; contamination of groundwater; herbicide and pesticide safety and other topical issues. In addition to written assignments, each student will be required to choose a topic in consultation with the lecturer and subsequently present a seminar for the class on that topic. For example, a golf course manager might address the ecological management of pest susceptible, regularly cut turf grasses growing on soils of low cation exchange capacity outside the usual thermal limits of the grasses.

CROP 5005 **Irrigation Science**
4 credit points
Coordinator Dr Sutton
Offered: July. **Classes:** (1 lee & 3 prac/workshop)/wk. **Assessment:** one 2000w report, one 1500w essay.

The unit covers the scientific basis of irrigation practice. Modification of productivity potential through irrigation. Objectives of irrigation. Biological, physical and technical aspects of irrigation science, including furrow, flood, sprinkler and drip systems. Efficiency of water use and the proper use of instrumentation for irrigation management.
Reference book
M. E. Jensen Design and Operation of Farm Irrigation Systems (American Society of Agricultural Engineers, 1980)

CROP 5009 **Diagnostic Methods in Turf Management**
2 credit points
Coordinator Dr Martin
Offered: February. Prerequisite: CROP 5001 Turf Management, CROP 5010 Turf Nutrition. Classes: 7 lee & seven 3hr prac. Assessment: one 1.5hr exam, an assignment and a prac exam.
Following an overview of the main chemical, physical and biological diagnostic tests used in the formulation of advice by turf consultants and in decision-making by turf managers, the course will provide an introduc-tion to tie theoretical basis and practical application (including interpretation guidelines) of selected chemical methods used for diagnostic purposes in the turf industry for soils, irrigation waters and plant tissues.
Reference book
G.E. Rayment and F.R. Higginson Australian Laboratory Handbook of Soil and Water Chemical Methods (Iskanta Press, 1992)

CROP 5010 **Turf Nutrition**
4 credit points
Offered: February. Assessment: one 2hr exam, assignments.
Essential and non-essential elements. Mineral toxicities. Physiology of nutrient uptake and use by grasses. The soil as a source of plant nutritients. Plant-soil interactions with special emphasis on root dynamics, soil water status and the rhizosphere. Quantitative aspects of turf nutrition and design of fertilizer programs.

CROP 5011 **Research Project 1 (Turf)**
10 credit points
Offered: February, July. Classes: February or July.
Candidates will conduct and report on a well-defined investigation into an area of interest in turf management.

CROP 5012 **Research Project 2 (Turf)**
10 credit points
Offered: February, July. **Classes:** February or July.
See CROP 5011

CROP 5013 **Research Project A1 (Turf)**
6 credit points
Offered: February, July. Classes: February or July.
Candidates will conduct and report on a well-defined investigation into an area of interest in turf management.

CROP 5014 **Research Project A2 (Turf)**
6 credit points
Offered: February, July. **Classes:** February or July.
See CROP 5013

Agricultural Entomology

ENTO 5002 **Special Topics in Entomology**
8 credit points
Offered: July. **Assessment:** assignment.

The course deals with specialised areas of particular interest to each candidate. Candidates will be given a selected reading list and will prepare discussion papers and essays on these topics.

ENTO 5003 **Taxonomy and Biogeography of Insects**
8 credit points . . .
Offered: February. Classes: (2 lee & 6 prac)/wk. Assessment: one 3hr exam & one 3hr prac exam, assignment.
The classification, life cycle and general biology of some orders of insects will be considered. Candidates will be given an introduction into the philosophy of taxonomy. Lectures will deal with insect zoogeography and phylogeny. Practical classes will give students good working knowledge of some insect orders. The collection will supplement the practical classes.

ENTO 5004 **Insect Ecology (Advanced)**
8 credit points
Dr Meats
Offered: July. **Classes:** (2 lee & 6 prae)/wk. **Assessment:** one 3hr exam, assignment.

Ecological principles will be dealt with as they apply to conservation, sustained-yield harvesting and pest management (classical and managed biological control, sterile male techniques, behavioural and integrated systems). The remainder of the course will emphasise behavioural mechanisms of importance to ecological systems. Further topics to be covered range from foraging theory and predator-prey interactions to interference mechanisms and opportunistic responses.

ENTO 5005 **Insect Collection**
4 credit points
Offered: July. Assessment: Insect collecting and mounting.
Students are shown how to collect, mount and store insects. A representative insect collection is required.

ENTO 5006 **Research Methods in Entomology A1**
8 credit points
Offered: February.

This will involve analytical laboratory work, manage-ment of experimental data and writing up of data for critical review.

ENTO 5007 **Research Methods in Entomology A2**
8 credit points
Offered: July.
See ENTO 5006.

Agricultural Genetics and Plant Breeding

BIOL 3103 **Mol Genetics and Recombinant DNA Tech**
12 credit points
Dr Lyon, Dr Raphael, Prof. Skurray and others
Offered: February. Qualifying: 16 credit points of Intermediate Biology including BIOL 2005 or 2905 (For BMedSc students BIOL 2005 or 2905). Prohibition: May not be counted with BIOL 3903. Classes: 4 lee & 8 prac/wk. Timetable 3. Assessment: One 3hr exam, one 1.5hr prac exam, prac reports, seminar, project.
A unit of study of lectures, seminars, practicals and tutorials on molecular genetics and its application to the genetic manipulation of both prokaryotic and eukaryotic organisms. Lectures cover gene isolation, characterisation and manipulation, eukaryotic

gene organisation, regulation and expression, the molecular basis of immune diversity, monoclonal antibody technology and antibody engineering, and the use of molecular genetic techniques in systematics and ecology. The application of molecular genetics in biotechnology is covered in lectures on the cloning and expression of foreign genes in bacteria, yeast, animal and plant cells, novel human and animal therapeutics and vaccines including human gene therapy, new diagnostic techniques for human and veterinary disease, the transformation of animal and plant cells and the genetic engineering of animals and plants, and the release of genetically-modified organisms into the environment. Practical work may include the use of molecular techniques for DNA isolation, digestion, electrophoresis, cloning and PCR amplification, DNA sequencing and computer analysis of gene sequences, and immuno-detection of proteins. The current uses and potential impact of bioinformatics in scientific research and development are supported by opportunities for students to access and search biological databases on the network.
Textbooks

Watson J D, Gilman M, Witkowski J, & Zoller M. Recombinant DNA (2nd Ed.). Freeman, 1992.

GENE 5001 Biotechnology

4 credit points
Dr Sharp
Offered: February, July.

A series of lectures and practical periods covering: techniques and potential uses of plant transformation in manipulating plant quality and agronomic characteristics; the use of molecular techniques in the diagnosis of plant diseases in plant breeding; the construction and use of genetic maps for selection in plant breeding programs.

GENE 5002 Breeding for the Environment

4 credit points
Dr Darvey
Offered: February, July. **Assessment:** Literature review, assignments.

Lectures and practical periods dealing with management of pests, diseases (fungi, bacteria and viruses) and environmental pollutants. Deals briefly with soil degradation and weed control. The plant breeding options will be discussed, including the selection, identification and transfer of genes for resistance to diseases, mineral toxicities, etc. The details of the National Rust Program and its philosophy for the genetic control of the rusts will be elaborated at both a theoretical and practical level. The greenhouse effect and the management options for rapidly altering breeding strategies in response to a changing environment will also be discussed.

GENE 5003 Cytogenetics and Genetic Manipulation

4 credit points
Dr Darvey
Offered: February, July. **Classes:** (mid year break, Jun/July).
Assessment: one 2hr exam.

Lectures and lab work in cytogenetics emphasising cereals and genetic means for manipulation and alien incorporation. Cytogenetics component includes chromosome identification; aneuploidy; polyploidy; genome origins; genetic control of chromosome pairing; gene mapping; and cytogenetics of crop species. Genetic manipulation component includes: alien genetic transfer; induced mutation; alternative methods for the production of haploids; genetic and cytoplasmic male sterility; alternative systems for hybrid production; wide-species crosses; and identification of useful genes (apomixis, meiotic, restitution, endosperm and embryo quality from wide species crosses, parthogenesis, semigamy, etc.). Practical component includes: techniques for chromosome identification (Feulgen staining, C-banding, N-banding, autoradiography); various tissue culture techniques including somaclone production and anther culture; and various other laboratory and greenhouse techniques including mutation breeding, chromosome doubling, etc.

Visits are made to key research centres including the CSIRO Division of Plant Industry in Canberra in conjunction with the biotechnology unit.

GENE 5004 Germplasm Management

4 credit points
Dr Darvey
Offered: February, July. **Assessment:** literature review, assignments.

Lectures on strategies and methods for germplasm collection, storage, evaluation, and utilisation; and on germplasm databases. A review of major international germplasm centres is also included.

GENE 5005 Plant Breeding A

8 credit points
Dr Darvey
Offered: February, July. Classes: mid-year break (Jun/July).
Assessment: open book exam, seminar assignments.
Lectures and laboratory work on the theory and philosophy of plant breeding. Special emphasis is placed on present and future technologies with respect to anther culture, mutation breeding, breeding for disease resistance, somaclonal variation, apomixis, interspecific hybridisation, the wheat x maize system for haploid production, hybrid producing systems and microspore culture for the production of transgenic plants. The unit aims to develop perspective in relation to research priorities and realistic research objectives. It also considers various aspects of program design and efficiency, including the cost of establishing and maintaining programs, returns to growers, and sources of income (PVR, patents, hybrid seed, etc.).

GENE 5006 Plant Breeding B

4 credit points
Offered: February, July. **Assessment:** literature review, assignments.

A review of various plant breeding programs, obtained from field trips to public and private breeding centres in eastern Australia, including the Phytotron in Canberra. The unit includes practical hands-on field experience. It also includes various aspects of plot design and automated data analysis, which are mainly presented during the visit to the Plant Breeding Institute at Narrabri.

GENE 5007 Introductory Plant Breeding

4 credit points
Dr Darvey
Offered: February, July.

Approximately 30 lectures and 30 hours of laboratory work devoted to the theory of plant breeding, conservation of genetic variability, breeding for resistance to disease and measurements and analysis of data.

GENE 5008 Quantitative Genetics

4 credit points
Offered: February, July.

A series of lectures and practical periods, dealing with population genetics and quantitative inheritance in plants or animals (PBI, Cobbitty if plants, or Department of Animal Science if animals)

GENE 5011 Research Project Additional

4 credit points
Offered: February, July. Classes: February or July semester.
An attempt is made to tailor the project to the student's requirements, thus discussion of project requirements is welcome prior to enrolment.

GENE 5012 Research Project (Agr Genetics) A1

8 credit points
Offered: February. Classes: February semester.
Candidates will conduct and report on a well-defined investigation into an area of interest in agricultural genetics.

GENE 5013 Research Project (Agr Genetics) A2

8 credit points
Offered: July. **Classes:** July semester.
See GENE 5012

GENE 5014 **Research Project (Plant Breeding) A1**
8 credit points
Offered: February. Classes: February semester.
An attempt is made to tailor the project to the student's requirements, thus discussion of project requirements is welcome prior to enrolment. Projects may be carried out at any of the Plant Breeding Institute locations (Campus, Cobbitty, Narrabri); however Australian students with access to approved research facilities (other universities, public or private breeding centres or laboratories, CSIRO, etc.) will be exempted from this requirement, subject to adequate supervision.

GENE 5015 **Research Project (Plant Breeding) A2**
8 credit points
Offered: July. **Classes:** July semester.
See GENE 5014.

Horticultural Science

HORT 5005 **Research Project (Horticulture)**
18 credit points
Offered: Full Year (starts Feb).
Candidates will conduct and report on a well-defined investigation into an area of interest in horticulture.

HORT 5006 **Special Topics in Horticultural Science**
4 credit points
Offered: February, July.
This unit deals with specialised areas of horticultural science of particular interest to each candidate. Examples of areas could include plastic recycling in horticulture or environmental risk of herbicides used by nurseries. Candidates will be given a selected reading list and will prepare discussion papers and/or essays.

HORT 5010 **Urban Horticulture (Advanced)**
4 credit points
fDr Martin
Offered: February. Classes: 3 lee 3 prac)/wk. Assessment: tone 2 hr exam (50%) prac reports (25%) assignments (25%).tt-
The unit covers the physiology, ecology, and management of urban trees; scientific aspects of design and management of sports field, parklands, and open areas, including management of native vegetation; and the environmental impact of urban horticultural activities and appropriate remedial strategies.

HORT 5011 **Research Project (Horticultural Science)**
24 credit points
Offered: Full Year (starts Feb). Classes: February and July.
•("Candidates will conduct and report on a well-defined investigation into an area of interest in horticulture.

HORT 5012 **Flower and Nursery Crops (Advanced)**
4 credit points
Dr Goodwin
Offered: July. **Classes:** (2 lee, 2 prac)/wk;. **Assessment:** one 2hr exam (60%), assignments (40%).
A discussion of the major aspects of the production of cut-flower and nursery crops, including protected cropping and glasshouse management. The unit will provide students with a detailed appreciation of the need for and methods of developing more precise production technology for these industries.

HORT 5015 **Postharvest Biology and Technology (Adv)**
4 credit points
Dr McConchie
Offered: July. **Classes:** (3 lee 3 prac)/wk. **Assessment:** two 1 hr exams (60%) assignments (40%).
The unit focuses on understanding the maintenance of quality during the harvesting, handling, storage and marketing of fresh horticultural produce. The subject addresses the technical issues and economic challenges associated with the delivery of living products to the consumer. Students will draw on examples from fruit, vegetable, cut flower, nursery, mushroom and turf crops.

HORT 5016 **Issues in Horticultural Sciences A**
4 credit points
Offered: February. **Corequisite:** HORT 5017. **Classes:** (1 lee, 1 sem, 1 lab)wk. **Assessment:** one 1 hr exam, essay and/or a design and report.
Students attend a series of workshops, seminars and excursions designed to provide them with a broad overview of current issues affecting the horticultural industries, and prepare an essay of 5000 words and/or a design and a report, and give a seminar on a topic of their choice, selected from a list which covers the main efficiency, marketing and environmental issues affecting Australian horticulture.

HORT 5017 **Issues in Horticultural Sciences B**
4 credit points
Offered: July. **Corequisite:** HORT 5016. **Classes:** (1 lee, 1 sem, 1 lab)/wk. **Assessment:** one 1 hr exam, essay and/or a design and report.
See HORT 5013

Microbiology

M1CR5001 **Microbiology A (Advanced)**
12 credit points
Dr Ferenci
Offered: February. Corequisite: MICR 5002 Microbiology A (Advanced). Classes: (3 lee, 6 prac, 3 other activities)/wk.
Assessment: one 1.5 hr and one 2 hr theory exams, prac.
The coursework for this unit follows substantially the same syllabus as the senior unit of study for Science students, General and Medical Microbiology (MICR 3001). As well as lectures and practical classes there is a variety of other activities, including workshops on library searches and laboratory instrumentation, mini lectures on data handling and laboratory safety, poster presentations, skills testing and tutorials. The unit of study covers two general areas:

Medical Microbiology - medical bacteriology, virology and parasitic diseases, epidemiology.

General Microbiology - microbial growth and metabolism, microbial ecology, food microbiology.

MICR 5002 **Microbiology B (Advanced)**
12 credit points
Dr Ferenci
Offered: July. **Corequisite::** MICR 5001 Microbiology A (Advanced). **Classes:** (3 lee, 6 prac, 3 other activities)/wk. **Assessment:** one 1.5 hr and one 2 hr theory exams, prac.
The coursework for this unit follows substantially the same syllabus as the senior unit of study for Science students, Molecular and Environmental Microbiology (MICR 3002). As well as lectures and practical classes there is a variety of odier activities, including workshops, mini lectures, poster presentations, skills testing and tutorials. The unit of study covers two general areas:

Molecular Microbiology: aspects of bacterial structure and physiology, principles of molecular pathogenicity.

Environmental Microbiology: microbial ecology, plant microbiology.

MICR 5004 **Special Aspects of Microbiology**
8 credit points
Offered: Full Year (starts Feb). **Assessment:** Dr Ferenci.
The unit of study may include tutorials, seminars, essays and directed reading on selected topics.

MICR 5005 **Research Project (Microbiology) A1**
8 credit points
Dr Ferenci.
Offered: February. Corequisite: MICR 5006.
Candidates are required to undertake a project, which will normally span 2 semesters, and submit a report in some advanced aspect of agricultural microbiology related to the area of interest.

MICR 5006 **Research Project (Microbiology) A2**
8 credit points
Dr Ferenci
Offered: July. **Corequisite:** MICR 5005.
See MICR 5005.

Plant Pathology and Plant Protection

CROP 5006 **Crop Protection (Advanced)**
4 credit points
Offered: July. **Classes:** July. **Assessment:** one 2 hr theory exam, laboratory work.
This unit considers the impact of weeds, insects and other invertebrates and disease on plant production and the various strategies for protecting plants from resulting damage. Environmental issues associated with pest control are emphasised. Topics covered include; crop loss assessment and economic threshold of damage; the origins of pest and disease problems and epidemiology; the major pest and disease problems in Australia; the use of pesticides and resistance to them; legislative aspects, and the role of quarantine and biological control agents for weeds, insects and pathogens. Laboratory work includes the biology of important fungal plant pathogens, the technology of spray application and case studies in integrated pest management.

PPAT 5001 **Biol & Control of Viral Bacteria Disease**
6 credit points
Offered: February. Assessment: one 3hr exam, assignment.
Lectures and laboratory classes on the characteristics of viruses and bacteria and their interactions with plants, and the principles of disease control.

PPAT 5002 **Defence Mechanisms of Plants**
6 credit points
Prof. Deverall
Offered: February. Assessment: one 3hr exam, assignments.
Lectures and laboratory classes on the genetic and physiological aspects of the interactions between plants and pathogens underlying disease resistance.

PPAT 5004 **Research Methods in Plant Pathology A**
16 credit points
Offered: July.
This unit involves analytical laboratory work and the management of experimental data, together with essay assignments on a range of topics in experimental plant pathology. A written report is required on the experimental work.

PPAT5005 **Soil Biology and Biodiversity**
6 credit points
Prof. Burgess
Offered: February. Assessment: one 3hr exam, assignment.
An introduction to the diversity of organisms found in the soil, and the ecological principles governing their activities and interactions. Practical applications are illustrated wiui particular reference to soilborne plant diseases. Practical classes demonstrate important tecniques for working with soil organisms and soilborne diseases, and for controlling the soil environment, especially soil water, to manipulate biological activity. Topics covered include the nature of the soil biota; isolation, identification and quantification of soil organisms; pathogenic and mutualistic interactions between fungi and roots; mycorrhizae; the nature and control of soilborne plant diseases; effects of water potential and temperature on the activity and survival of soil fungi; temporal and spatial distribution of soil fungi and soilborne diseases; and the soil biology of conservation farming.

PPAT 5006 **Special Topics in Plant Pathology**
8 credit points
Offered: July.
This unit deals with specialised areas of particular interest to each candidate. Candidates will be given a reading list on which essays and/or seminars will be presented.

PPAT 5010 **Plant Protection Research Methods A1**
8 credit points
Offered: July. **Assessment:** Assignment.
This will involve analytical laboratory work, and management of experimental data on a topic in plant protection.

PPAT 5011 **Plant Protection Research Methods A2**
8 credit points
Offered: July. **Assessment:** Assignment.
See PPAT 5010.

PPAT 5012 **Research Methods in Plant Pathology B1**
6 credit points
Offered: February.
This unit involves analytical laboratory work and the management of experimental data, together with essay assignments on a range of topics in experimental plant pathology. A written report is required on the experimental work.

PPAT 5013 **Research Methods in Plant Pathology B2**
6 credit points
Offered: July.
See PPAT 5012

PPAT 5014 **Adv Field/Lab Studies in Plant Disease**
6 credit points
Professor Burgess, Dr Summerell, Dr Park, Dr Wellings and external specialists
Offered: February.
This module is designed to provide experience in field studies on the diagnosis and control of plant disease and diagnostic procedures for all types of pathogens. It will include studies in modern approaches to fungal taxonomy and identification, including molecular techniques. It will also include an introduction to modern methods for breeding for resistance to pamogens. An introduction to scientific investigations and literature surveys including computer research techniques will also be included

Soil Science, Soil Conservation and Soil Contamination

AGEC5010 **Natural Resource Economics (Advanced)**
8 credit points
Offered: July. **Classes:** 3 lee & 1 tut/lab)wk. **Assessment:** one 3hr exam, assignments.
A unit in natural resource economics of relevance to agriculture and the resource industries. Issues discussed are: the environment as a source of environ-mental services; socially efficient resource allocation and Pareto welfare economics; market failure and characteristics of environmental services; benefit cost analysis of public projects, including the modification of environmental services; non-depletable resources and pollution; depletable resources; irreversibility; sustainabihty. Applications include land degradation, fisheries, forestry, land-use planning and greenhouse effect.

SOIL 5001 **Adv Methods of Studying & Analysing Soil**
6 credit points
Prof McBratney, Dr Singh, Dr Cattle
Offered: July. Classes: (3 lee, 1 tut & 8hr prac)/7wk (2nd half).
Assessment: one 3hrexam, lab report, problem sets, essay.
Seven weeks of lectures and practicals concerning new and advanced methods for studying soil. Topics include electronic microscopy, advanced X-ray analysis, soil dating techniques including 13 C and thermoluminescence, dynamic simulation modelling of carbon turnover, quality control of routine analytical techniques and measurement of soil microbial biomass.

SOIL 5002 **Advanced Pedology**
6 credit points
Offered: February.

Prof. McBratney for description.

SOIL 5003 Chemistry of the Soil Environment

6 credit points
Offered: July. Classes: (3 lee, 1 tut & 8hr prac)/7wks (first half).
Assessment: one 2hr exam, prac report, problem sets, essay.
Topics include cation exchange capacity and pH dependent charge, soil charge characteristics, soil chemical analyses and their interpretation, formation of acid soiloAl and Mn toxicities, chemistry and adsorption/desorption of K, P and S in soil, soil solution and speciation of ionic components, soil salinity and sodicity, oxidation/ reduction reactions in soil and chemistry of soil organic matter and nitrogen.

SOIL5004 Form Eval & Management of Soil Resource

8 credit points
Prof. McBratney
Offered: July. Classes: (4 lee & 3hr prac)/wk, 5 days in the field.
Assessment: one 3hr exam, report, field and lab work.
Lectures on classification of soil, soil survey, pedological processes, geomorphology and soil stratigraphy, aerial photography, geostatistics and their application to land evaluation for rural purposes, the forms of land degradation occurring in Australia, and management conducive to sustainable soil husbandry.

Field work involves landscape description and the description, mapping and sampling of soil profiles for the purpose of assessing land use capability and field variability of soil properties.

Laboratory work involves routine physical and chemical tests of samples taken in the field relevant to assessment of the land-use potential and the quantification of the soil variability at the survey site.

SOIL 5005 Physical Modelling of Soil Environment

6 credit points
Prof. McBratney
Offered: February. Classes: (2 lee, 1 tut & 5hr prac)/7wks, 5 days in the field (first half). **Assessment:** one 2hr exam, field and prac reports, problem sets, essays.
The emphasis is to examine the quantitative aspects of soil physics particularly in relation to the transfer of energy, gas, water, solids and solutes in soil.

Lecture and laboratory topics include heat flow, gas movement, soil water energetics, saturated and unsaturated flow of soil water, infiltration, solute movement, water and wind erosion as well as the fundamentals of numerical computer modelling of soil physical processes.

Field work involves field measurement of soil physical properties such as hydraulic conductivity and infiltration rates and moisture content.

SOIL 5006 Soil Contamination

10 credit points
Dr Singh
Offered: July. Classes: (4 lee & 1 prac)/wk; 5 days of fieldwork.
Assessment: one 3hr exam, essay, field and lab work.
The unit explores topical environmental issues concerned with soil contamination and considers causes of soil contamination; sampling of contaminated soil, analysis and interpretation; hazards posed to biological systems; and soiLarid waste management strategies in pollution prevention and land reinstate-ment. Amongst the topics considered are sewage sludge (heavy metals and organics), agrochemicals (pesticides and nitrogenous fertilisers), acid rain (aluminium toxicity), industrially-contaminated land (petrochemicals, cyanides, phenols, asbestos, catalysts, PAHs, PEA, strong acids/bases), domestic waste (methane, plastics, metalliferous materials), mines and mine wastes (coal, oil shale, metal ore mining) and reinstatement of spoiled soils (soil storage/emplacement, slope stability, vegetation establish-ment, use of ameliorants, end-use sensitivity).

Laboratory classes will involve the study and determination of soil contaminants and investigations into their retention, movement and phytotoxicity. Site visits will provide an opportunity to view problems and practical solutions in the field.

SOIL 5007 Soil Mineralogy, Pedogenesis & Taxonomy

6 credit points
Offered: February. Classes: (3 lee, 1 tut & 8hr prac)/7wks.
Assessment: one 2hr exam, prac reports.
This unit centres on a weathering study which traces the changes from a rock parent material up through the soil profile. The methods of study include particle-size analysis and extraction of a fine-sand fraction for optical identification and quantification of the mineral species present. Thin sections of the rock and profile are prepared, examined and the main features identified and quantified. The data from the sand analysis, micromorphological investigations and clay mineral assessments are used to provide an understanding of the pedogenesis of the particular soil. A detailed study, including exercises, is made of the USDA soil classification system, Soil Taxonomy.

SOIL 5008 Soil Properties and Processes

8 credit points
Prof. McBratney, Dr Cattle .. '
Offered: February. Classes: (4 lee & 4hr prac)/wk, 1 day in the field.
Assessment: one 3hr exam, class work, prac book.
This unit includes the fundamental properties of soil, the factors of soil formation, and the processes that operate in the soil system. Components comprising pedology, soil physics, soil chemistry and soil biology are synthesised by reference to common soil horizons and profiles from N.S.W. Field studies start with description and assessment of essential characteristics. The physics of water and gas movement, temperature, density, swelling and strength are considered. The chemistry of soil solids, surfaces and solutions are discussed as well as macronutrients and micro-nutrients and problems such as salinity, acidity and waterlogging. There is also some discussion of soil microorganisms and microbiological transformations in the soil.

SOIL 5009 Strategies for Soil Conservation

10 credit points
Offered: July. Classes: 10 days in the field (semester breaks).
Assessment: assignment, seminar.
Candidates will investigate and integrate biological, chemical, physical, economic and sociopolitical constraints on soil conservation in the context of a particular enterprise, farming system or geographic region. This will involve the design and execution of a field-sample survey. The concepts of land care and sustainable development will be investigated thoroughly.

SOIL 5010 Research Project A (Soils)

8 credit points
Offered: February, July, Full Year (starts Feb).
Candidates will conduct and report on a well-defined investigation into an area of interest in soil science or soil conservation.

SOIL 5011 Research Project (Soils)

16 credit points
Offered: February, July, Full Year (starts Feb).
Candidates will conduct and report on a well-defined investigation into an area of interest in soil science or soil contamination.

CHAPTER 6

Postgraduate research and scholarships

Postgraduate research institutes

Plant Breeding Institute

The Plant Breeding Institute associated with the Faculty promotes the science of plant breeding, and the improvement of crop plants available for cultivation in New South Wales. The Institute is governed by a council composed of the Vice-Chancellor, members of the NSW Wheat Research Foundation, members of the Faculty of Agriculture, and a representative of the NSW Minister for Agriculture and Rural Affairs. The Professor of Plant Breeding is the Director of the Institute.

(See the University of Sydney Calendar, Vol. I: Statutes and Regulations section, Appendix 1.)

Institute of Advanced Studies

The Institute of Advanced Studies was established within the Faculty of Agriculture in 1974 to advise the Senate regarding several bequests. The Institute will use the funds to further the development of postgraduate studies and research in the Faculty, and be responsible for the administration of the scholarship program of the Faculty. It is intended that the Institute shall promote the attraction of additional income.

The directors of the Institute are appointed from and by members of the Faculty of Agriculture who are full-time permanent members of the departments. The Dean and Associate Dean (Postgraduate Studies) are ex officio directors.

(See the University of Sydney Calendar, Vol. I: Statutes and Regulations section, Appendix 1.)

Summary of scholarships and prizes

The tables below are a summary only; for full details concerning the conditions governing the awards of these prizes and scholarships contact the Scholarships Office.

Awards not restricted to graduates in Agriculture

Travelling scholarships

Baillieu Research Scholarship *
H.S. Carslaw Memorial Scholarship *
William and Catherine Mcllrath Scholarship
The Rhodes Scholarship
The Gowrie Postgraduate Research Scholarships
The J.B. Watt Travelling Scholarship
The James King of Irrawang Travelling Scholarship*
The G.H.S. and I.R. Lightoller Scholarship*
The Charles Gilbert Heydon Travelling Fellowship in the Biological Sciences
The Eleanor Sophia Wood Travelling Fellowships
The Herbert Johnson Travel Grants*
The Commonwealth Scholarship and Fellowship Plan Awards
♦Grants in aid

Other scholarships are available.

Enquiries about scholarships should be made at the Scholarships Office. International students should make their enquiries at the International Office. Enquiries about scholarships offered by other universities should be addressed to the registrar of the university concerned. Scholarship conditions may change without notice.

Postgraduate scholarships and prizes

The University of Sydney on the recommendation of the Faculty of Agriculture awards postgraduate scholarships to candidates proceeding by research and thesis to the degrees of Doctor of Philosophy, Master of Science in Agriculture and Master of Agricultural Economics. The terms and conditions for the Thomas Lawrance Pawlett Postgraduate Scholarship, the Christian Rowe Thornett Scholarship, the Alexander Hugh Thurburn Scholarship, the W.C. Turland Postgraduate

Scholarship	Value $ (July 2000)	Closing date for applications	Other information
Tenable at the University of Sydney			
Australian Postgraduate Awards	17 071	31 October	Graduates with Hons I. For research in any field
University of Sydney Postgraduate Awards	17 071	31 October	Graduates with Hons I. For research in any field
Henry Bertie and Florence Mabel Gritton Postgraduate Research Scholarships	17 071	January	For research in chemistry in relation to industry and agriculture
Richard Claude Mankin Scholarship - Postgraduate	asAPA	January	For research into water conservation.
James Vincent Scholarship in Microbiology	up to 1000	31 March	APA or similar scholarship holders working in applied microbiology
Awards restricted to candidates in Agriculture			
McCaughey Memorial Institute Scholarship	as for APA	as advertised	Graduates to conduct research in agricultural sciences with particular relevance to rice
Norman Scott Noble Scholarship	up to 1000	30 April	Travel grant or grant-in-aid to candidates in the discipline of agricultural entomology
Irvine Armstrong Watson Scholarship	up to 500	30 April	Travel grant or grant-in-aid to candidates in the disciplines of agricultural genetics, biometry, plant breeding or plant pathology

Faculty scholarships

The following five are identical (except that the F.H. Loxton is restricted to males - under review) and are awarded annually depending on the availability of funds.

Scholarship	Value $ (July 2000)	Closing date for applications	Other information
Thomas Lawrence Pawlett Postgraduate Scholarship	as for APA	31 October	Graduates for full-time research within Faculty (Preference to Hons I or II Div. 1 or equivalent)
Christian Rowe Thornett Scholarship	as above	31 October	as above
Alexander Hugh Thurburn Scholarship	as above	31 October	as above
W.C. Turland Postgraduate Scholarship	as above	31 October	as above
F.H. Loxton Postgraduate Scholarship	as above	31 October	as above. Restricted to males

Scholarship, the F.H. Loxton Studentship and the McCaughey Memorial Institute Scholarship are listed below. They are normally offered annually, when available, as soon as possible after the award of the Australian Postgraduate Awards upon which value the stipend is based.

Common terms and conditions of award

The scholarships are awarded under the following general terms and conditions of award:

1. The object of the scholarships shall be the encouragement and promotion of the scientific study of agriculture within the Faculty of Agriculture.
2. The scholarships shall be awarded by the Faculty of Agriculture, to University graduates, graduands or persons holding equivalent qualifications who are eligible for admission to candidature for a higher degree by research and thesis and who enrol as full-time candidates.
3. In awarding the scholarships, consideration shall be given to the work of the applicants during their undergraduate courses, their postgraduate careers, if any, and their special aptitude and ability to carry out the object of the scholarship.
4. The annual value of the scholarship shall be equal to the value of the Australian Postgraduate Awards and shall provide the same allowances as those awards
5. The maximum tenure of the scholarships shall be, in the case of a candidate:
   (a) for the degree of Master, for two years, or
   (b) for the degree of Doctor of Philosophy, for diree years and in exceptional circumstances may be extended by up to six months.
6. The tenure of the scholarships may be, in the case of a candidate:
   (a) who has been enrolled previously for a higher degree in the Faculty of Agriculture, reduced by the time credited towards the degree for which the candidate enrols, or
   (b) who is or has been enrolled for the same degree for which the scholarship is awarded, reduced by the time the candidate has been enrolled for that degree.
7. The scholar shall furnish progress reports to the Faculty annually at the end of the academic year and at other times if directed.
8. The scholar shall acknowledge the tenure of the scholarship in any thesis or other publication which shall result from such tenure.
9. No scholar shall, except with the approval of the Faculty, occupy any salaried position or hold any other award during the term of appointment. The scholar may undertake teaching assistance consistent with the University Postgraduate Research Award conditions.

Specific terms

The following specific terms and conditions of award apply:

Thomas Lawrance Pawlett Scholarships

Dr Thomas Lawrance Pawlett of Cremorne bequeathed the income from his residuary estate to the University for the purpose of encouraging and promoting the scientific study of agriculture in connection with the said University for the founding of a research or travelling scholarship or scholarships in agriculture, to be called the Thomas Lawrance Pawlett Scholarship.

There are fliree types of scholarship established under the foundation: the Thomas Lawrance Pawlett Postgraduate Scholarship, the Thomas Lawrance Pawlett Postdoctoral Scholarship and the Thomas Lawrance Pawlett Visiting Scholarship.

Thomas Lawrance Pawlett Postgraduate Scholarship

The scholarship is awarded under the following specific condition:

1. The name of the scholarship shall be the Thomas Lawrance Pawlett Postgraduate Scholarship.

Christian RoweThornett Scholarship

The scholarship was established in 1975 by a bequest from Mrs Christian Rowe Thornett for the teaching and development of agricultural science.

The scholarship is awarded under the following specific condition:

1. The name of the scholarship shall be the Christian Rowe Thornett Scholarship.

Alexander HughThurburn Scholarship

In 1972 the Faculty of Agriculture received a bequest from Mary Esme Thurburn, who established a scholarship in memory of her husband.

The scholarship is awarded under the following specific condition:

1. The name of the scholarship shall be the Alexander Hugh Thurburn Scholarship.

W.C.Turland Postgraduate Scholarship

The scholarship was established in 1976 by a bequest from W.C. Turland.

It is awarded under the following condition:

1. The name of the scholarship shall be the W.C. Turland Postgraduate Scholarship.

F.H. Loxton Postgraduate Scholarship

[Under review]

Established in 1960 under the will of F.H.Loxton, who bequeathed a portion of the income of his residuary estate to the University for the purpose of establishing and maintaining studentships and or scholarships tenable in the Faculties of Veterinary Science, Agricultural Science and Engineering in particular in the Department of Chemical Engineering. A studentship is available in each of the foregoing faculties.

The studentships are awarded under the following conditions:

1. The name of the studentships shall be the F.H.Loxton Postgraduate Studentships.
2. The object of the studentships shall be to enable a male graduate of any university to engage in postgraduate research within the University of Sydney in the Faculties of Veterinary Science, Agricultural Science and Engineering.

(Remaining conditions for Agriculture are the same as for Turland, Pawlett etc)

The McCaughey Memorial Institute Scholarship

(Currently suspended)

Established in 1989 by an offer from the McCaughey Memorial Institute to encourage studies in the agricultural sciences, with particular relevance to rice.

The scholarship shall be awarded under the following conditions:

1. The name of the scholarship shall be The McCaughey Memorial Institute Scholarship.
2. The scholarship shall be awarded by the Faculty of Agriculture, on the recommendation of the Dean of the Faculty, to a student enrolling as a full-time candidate for a higher degree by research and thesis in the agricultural sciences with particular relevance to rice, providing the student's work is of sufficient merit.
3. In awarding the scholarship, consideration shall be given to the work of the applicants during their undergraduate courses, their postgraduate careers, if any, and their special aptitude and ability to carry out the objective of the scholarship.
4. The annual value of the scholarship shall be equal to the value of an Australian Postgraduate Award and shall provide the same allowances except that the recipient shall be eligible to apply for a Research Grant offered by the McCaughey Memorial Institute up to the value of $5000 per annum.
5. The conditions and tenure of the scholarship shall be the same as those for the Australian Postgraduate Research

Awards except that non-residents of Australia are eligible to apply and the scholarship is not transferable to another institution.
6. The recipient shall acknowledge the tenure of the scholarship in any thesis or other publication which shall result from such tenure.
7. Recipients may not occupy any salaried position or hold any other award during the term of appointment except for that approved by the APA conditions, unless approval has been given by the Faculty.

Postdoctoral and visting fellowships

Thomas Lawrance Pawlett Postdoctoral Scholarship

(Currently suspended)

The scholarship is awarded under the following conditions:
1. The name of the scholarship shall be the Thomas Lawrance Pawlett Postdoctoral Scholarship.
2. The objects of the postdoctoral scholarship shall be the encouragement and promotion of the scientific study of agriculture in connection with the University of Sydney.
3. One postdoctoral scholarship shall be awarded by the Senate of the University acting on the recommendation of the Faculty of Agriculture normally to persons holding the degree of Doctor of Philosophy in the Faculty of Agriculture of the University or in another university. However, persons who have research publications revealing equivalent status or who are awaiting the result of a PhD examination, shall be considered eligible to apply for an award.
4. In awarding the postdoctoral scholarship, consideration shall be given to the academic record of the applicants, their postgraduate career, and their special aptitude and ability to carry out the objects of the foundation.
5. (a) The postdoctoral scholarship shall be of the annual value of $5000. The payments shall be made half-yearly in advance. In the case of resignation or other withdrawal from the scholarship, payment of the salary shall be made for the time during which the scholarship may have been actually held. An additional amount of up to $800 may be granted for travelling expenses for the scholar.
   (b) When funds are available, the Faculty may recommend the award of up to three travel grants to persons who are eligible for the postdoctoral scholarship (see clause 3 above). The travel grants shall have a value of up to $1800 and may, with the approval of the Senate, be held concurrently with another award which accords with the objects of the Thomas Lawrance Pawlett Postdoctoral Scholarship.
6. No scholar shall, except with the approval of the Senate, occupy any salaried position or undertake any employment for payment or hold any other award during the term of appointment, and every scholar shall work full-time on the research the scholar has been appointed to carry out.
7. The postdoctoral scholar shall be required to furnish a report on the completion of tenure of the scholarship to the Faculty of Agriculture. In the case of all work published in the form of papers or reports, as the result of holding the postdoctoral scholarship, the scholar shall furnish a copy to the Faculty of Agriculture and shall distinctly indicate that the scholar is the holder of a Thomas Lawrance Pawlett Postdoctoral Scholarship of the University of Sydney.
8. (a) The postdoctoral scholar who is a Doctor of Philosophy of the University of Sydney may apply to carry out investigations at the University of Sydney or at such other place, or places, as may be approved by the Faculty of Agriculture.
   (b) The postdoctoral scholar who is a Doctor of Philosophy of another university shall carry out investigations at the University of Sydney.
   (c) All postdoctoral scholars must undertake to conform to the regulations drawn up by the University of Sydney.
9. The postdoctoral scholarship shall be tenable for one year.
10. The Senate may prescribe, from time to time, such further regulations as may be found necessary.

Awarded when funds are available.

Thomas Lawrance Pawlett Visiting Scholarship

(Currently suspended)

The scholarship is awarded under the following conditions:
1. The name of the scholarship shall be the Thomas Lawrance Pawlett Visiting Scholarship.
2. The object of the scholarship shall be the encouragement and promotion of the scientific study of agriculture in connection with the University of Sydney.
3. The scholarship which shall be available each year shall be awarded by the Senate of the University acting on the recommendation of the Faculty of Agriculture to overseas scholars distinguished in some fields related to the scientific study of agriculture.
4. The scholar shall undertake research for a minimum period of one semester in the University of Sydney in the appropriate department.
5. The scholarship shall be of the value of $3500.
6. The scholarship may be held concurrently with another award or remuneration.

Thurburn Visiting Fellowship

(Currently suspended)

Under the will of Mary Esme Thurburn, who died in 1970, the residuary estate was bequeathed to the University of Sydney Faculty of Agriculture to be used for such purposes as the Senate may determine.

In 1975 the following conditions of award were approved:
1. The name of the fellowship shall be the Thurburn Visiting Fellowship.
2. The object of the fellowship shall be the encouragement and promotion of study in agriculture within the Faculty.
3. The fellowship shall be awarded from time to time by the Senate of the University on the recommendation of the Faculty of Agriculture.
4. The Fellow shall participate in research, public discussion and lecturing for a minimum of one semester.
5. The Fellow will receive an allowance of $500 per week, with a maximum allowance of $8000. There will be an additional grant to cover economy class return air travel by the most direct route and the most economical rate available at the time.
6. An allowance of up to $1500 may be made, on the recommendation of the Institute of Advanced Studies, to assist with expenses associated with the Fellow's visit.

Grants in Aid

Grants-in-aid are designed to provide supplementary living allowances, travel grants or grants-in-aid. Apphcants must be:
(1) enrolled full-time in a higher degree at The University of Sydney (some grants-in-aid are also open to part-time students and graduates); and
(2) citizens or permanent residents of Australia.

Applicants are required to complete a single application form for the awards and they will be considered for the award(s) for which they are eligible.

If seeking one of the awards designed to support overseas travel, it is essential that apphcants justify in their applications why support for overseas travel is being sought. Apphcants should state whether their research can be undertaken in Australia and, if not, why it is necessary for mem to travel overseas for purposes of study. Apphcants should provide an outline of their proposed travel plans, indicating the extent to which the period of overseas study is necessary and is regarded to be integral to their total research program, in addition to details of current financial support and the amount of funding sought from the scholarships. If necessary, a separate sheet should be attached to the application form.

Applications must be lodged no later than the closing date of 30 April in each year.

These awards, details of which follow, are currently offered as grants-in-aid only in the Faculty of Agriculture:

Award	Maximum value $
Norman Scott Noble Scholarship	1000
Irvine Armstrong Watson Scholarship	500

Note: The selection committees reserve the right to share any of the above awards.

Norman Scott Noble Scholarship

Established in 1987 by a donation of $14 000 by Mrs Mabel Noble in memory of her husband, Dr Norman Scott Noble, a distinguished graduate of the Faculty of Agriculture.

The scholarship is awarded under the following conditions:

1. The name of the scholarship shall be the Norman Scott Noble Scholarship.
2. The objects of the scholarship shall be to further studies in agricultural entomology and to encourage and promote the discipline at the University of Sydney.
3. The scholarship shall be awarded by the Faculty of Agriculture on the recommendation of the Dean, who shall act on the advice of the appropriate professors, associate professors, readers and the candidate's supervisor in recommending the award and in determining the value of the scholarship.
4. The scholarship may only be awarded to a candidate enrolled in the Faculty of Agriculture for a higher degree or a diploma in the discipline of agricultural entomology.
5. The scholarship may be held in conjunction with any other postgraduate award and may be in the form of a travel grant or a grant-in-aid for the holder for expenses incurred in connection with the holder's research.
6. More than one scholarship may be awarded in any one year if sufficient funds are available. The maximum amount available for the award of the scholarships in any year shall be $1,000.
7. A candidate may be awarded the scholarship more than once, provided that the total value of the awards to any one candidate does not exceed $3000.

Applications for the scholarship shall be in the hands of the Registrar by 30 April each year.

Irvine Armstrong Watson Scholarship

The scholarship was established in 1987 by a donation of $5000 by Mrs Loloma Watson and family in memory of their husband and father, Emeritus Professor Irvine Armstrong Watson.

The scholarship is awarded under the following conditions:

1. The name of the scholarship shall be the Irvine Armstrong Watson Scholarship.
2. The object of the scholarship shall be to further studies in the disciplines of agricultural genetics, biometry, plant breeding or plant pathology.
3. The scholarship shall be awarded by the Faculty of Agriculture on the recommendation of the Dean, who shall act on the advice of the appropriate professors, associate professors, readers and the candidate's supervisor in recommending the award and in determining the value of the scholarship.
4. The scholarship may only be awarded to a candidate enrolled in the Faculty of Agriculture for a higher degree or a diploma in one of the disciplines of agricultural genetics, biometry, plant breeding or plant pathology.
5. The scholarship may be held in conjunction with any other postgraduate award and may be in the form of a travel grant or a grant-in-aid for the holder for expenses incurred in connection with the holder's research.
6. More than one scholarship may be awarded in any one year if sufficient funds are available. The maximum amount available for the award of the scholarships in any year shall be $500.
7. A candidate may be awarded the scholarship more than once, provided that the total value of the awards to any one candidate does not exceed $1000.

Applications for the scholarship shall be in the hands of the Registrar by 30 April each year.

CHAPTER 7

Other Faculty information

This chapter of the handbook contains information specific to the Faculty of Agriculture and some general information. For further details about discontinuation and examinations, as well as general information about the organisation of the University, assistance for students with disabilities, child care facilities, accommodation, health, counselling, financial assistance, careers advice and a range of other matters, see the University of Sydney Diary, available free from the Student Centre and Student Union outlets.

Enrolment

New students and re-enrolling students who do not satisfy the pre-enrolment conditions collect their enrolment forms from the Faculty Office in the McMillan Building where they choose units of study and lodge a registration form.

Confirmation of enrolment

All the information provided when you enrol is added to the University's computerised student record system. This includes your degree, academic year and the subjects you are taking. It is important that this information be recorded correctly at the beginning of the year, and amended should a change occur in any of the details during the year. Any subject enrolment has a financial implication under the Higher Education Contribution Scheme (HECS).

To enable you to see what enrolment data has been recorded, you will be sent a 'confirmation of enrolment' notice shortly after completion of enrolment. You should check this carefully. If the information is correct you should keep the notice as a record of your current enrolment. Should the notice be incorrect in any detail, you should apply at the Faculty Office immediately to have your record amended. A new confirmation will then be prepared and sent to you. You will also receive, about two months after the beginning of each semester, a statement showing your HECS assessment for that semester. If there appears to be an error in this assessment, you should follow the directions for correction of the assessment which are included on the statement.

If you wish to:

- change a subject in which you are enrolled;
- discontinue a subject; or
- discontinue enrolment totally;

you should apply at the Student Centre or Faculty Office for the appropriate form and then at the Faculty Office to obtain approval. Your record at the University will not be correct unless you do this. It is not sufficient for instance to tell the lecturer, associate lecturer or even the departmental office that you discontinued a subject. Unless an enrolment change is approved formally at the Faculty Office it will not be accepted by the University and in some cases will incur a financial liability under HECS.

Examinations

There are two formal examination periods each year:

Period	Held	Approximate duration
February semester	June	2 weeks
July semester	November	3 weeks

In addition individual faculties and departments may examine at other times and by various methods of assessment, such as essays, assignments, viva voce, practical work, etc. Some departments do not examine during the February semester.

The following information applies to the Bachelor of Agricultural Economics, Bachelor of Horticultural Science, Bachelor of Land and Water Science, Bachelor of Resource Economics and Bachelor of Science in Agriculture degrees.

Notification of examination results

The results of semester examinations are available on the Intranet, displayed on departmental noticeboards and posted directly to you at the end of each semester.

Disclosure of examination marks

Final marks will appear on your semester result notice. Marks may also be obtained from your department for the major components of assessment which make up the final marks. You are entided to information about any details of the assessment procedures used to determine the final result.

Your examination scripts and any other assessment material may be retrieved within a reasonable time after the completion of assessment in each unit. This does not apply to examination papers which involve the repeated use of the same material in successive examinations.

Examination grades

Each subject taken will be allotted one of the following grades at examinations:

Grade	Percent
High Distinction	85-100
Distinction	75-84
Credit	65-74
Pass	50-64
Pass (Concessional)*	46-49 (Yrs 1 & 2 in BHortSc, BLWSc, BScAgr only)
Fail	below 46 (Yrs 1 & 2 in BHortSc, BLWSc, BScAgr only)
Fail	0-49

*See section on concessional passes.

Concessional passes

(a) The award of a Pass (concessional)(marks 46-49) in a unit of study entitles the student to receive credit points for that unit of study and to continue in the degree course unhindered.

(b) The concessional pass is not available for candidates in the BAgrEc and BResEc degrees.

(c) For candidates in the BScAgr, BHortSc and BLWSc degrees:
(i) Concessional passes are available only in level 1000 units of study (maximum of 12 credit points) and level 2000 units of study (maximum of 14 credit points)
(ii) When Concessional pass results total more than 12 (level 1000) or 14 (level 2000) credit points, the student shall decide which unit of study or units of study to count for the degree.

Illness or misadventure

You may apply to the Faculty in writing for special consideration of your examination performance on grounds of illness or misadventure. In the case of illness a medical certificate should be provided. The minimum requirements of a medical certificate are that it:

(a) be submitted and signed by your own medical practitioner and indicate the dates on which you sought attention;

(b) certify unambiguously a specified illness or medical disability for a definite period;

(c) indicate the degree of your incapacity, and express a professional opinion as to the effect of your illness on your ability to take an examination.

Certificates in connection with annual examinations should be submitted prior to the examinations, unless the illness or misadventure takes place during the examinations, in which case the evidence must be forwarded as soon as practicable, and in any case before the close of the examination period. There is a special form available at the Student Centre and at the University Health Service for submission with medical certificates.

For consideration on the grounds of misadventure, your application must include a full statement of circumstances and any available supporting evidence.

The need to seek early advice

Many students in need of advice fail to make full use of the assistance available to them. If you believe that your performance during a course, or your preparation for your examinations, has been adversely affected by medical, psychological or family circumstances, you should seek advice as early as possible. Members of the teaching staff, of the University Counselling Service, and of the University Health Service, are all available for consultation and can give advice on appropriate action to take.

Ancillary fees and charges

The following fees and charges from 2000 can be a guide for similar charges in 2001.

Agricultural Chemistry and Soil Science

Laboratory manuals and lecture notes are sold to students at below cost (combined charges are $25 for each unit of study). Students are advised of charges at the beginning of the respective unit. Students may access these materials electronically or from a copy kept in the Department.

Students are required to contribute towards the cost of accommodation for excursions in optional 3 rd and 4 th Year units in Soil Science and Agricultural Chemistry (approximately $100-180, depending on the excursion). The balance of the accommodation costs, transport and some meals are covered by the Department.

Department of Crop Sciences

The Department gives all first to third students free email and a free computer printing allocation of 125 pages to cover what may be expected by way of assignments and computer output from practical classes. For personal or additional printing they pay at the same rate as that set by the Department of Agricultural Economics, namely $11 per 125 pages. Fourth Year and Postgraduate students have unlimited printing rights but printing is monitored on an individual basis.

Agricultural Science 1

Handbook at cost, approximately $14 (voluntary).

Crop Science 2 and Plant Disease 3

There are charges for handbooks of procedures for laboratory work at cost recovery, ie printing costs are met. The manuals assist students in performing lab work. They are verbally advised of the fee at the beginning of the course. The manuals are not available in the library.

Agricultural Genetics

There have been no extra fees in undergraduate courses. For the MAgr (coursework) degree, students pay for accommodation on field trips, but no money goes to the Department.

Biometry

Printed manuals are available for most units. In 2000 the charge was $15 per manual, less than printing costs. Additional material is handed out during class at no cost. Students are advised orally and by email of the charge for each manual. The manual is available on the Department's computer network, as are practical and tutorial solutions.

Agronomy units

Agronomy 3 - No fees.

Agronomy 4 - No fees for notes. Students pay for their accommodation (approx $200) on domestic excursions, but transport is provided at no charge. There is a voluntary excursion to New Zealand on which students pay their own airfares; other costs are met by the Department.

Fees for Faculty excursions

A standard $45 is charged for Second and Third year excursions. (Students must attend one of the First, Second or Third year excursions). This covers almost all meals needed during the trip and a booklet is issued to all students. Little or no profit is generated by this charge. Local transport is provided free. Students must reach the start point of each trip at their own expense (approx)$50.

The voluntary First and Fourth year excursions are self funding and the cost varies according to the level of accommodation chosen by the student (a range is offered). The fees are collected before the trip and there is no profit.

Microbiology

The Department recommends that students purchase Practical Manuals for the laboratory course from the Student Copy Centre at a cost recovery price ($14.50 in 2000). Copies of the manuals are available in laboratories if students wish to make photocopies of them. Other notes are provided gratis at lectures and practical classes.

Students are advised of fees, in written form, at the enrolment registration or first lecture or practical class.

Animal Science

There are charges for handbooks of procedures for laboratory work or additional materials for some units. While not mandatory, students are encouraged to purchase these. Charges would not exceed $35 for any unit. Students can borrow this material from teaching resource centres to photocopy, but the cost of photocopying the material exceeds the cost of the material made available in bulk as printing costs are less than photocopy costs. The materials improve learning.

Students are advised about handbooks during the first lecture in the unit or in the previous year. For other material, students are advised in lectures/practical classes/tutorials, as appropriate.

The cost of the excursion is approximately $100 which includes 80% of meals, accommodation, transport, entry to the Hay Merino show and notes.

An optional meat and carcass evaluation course is available through Werrington TAFE at a cost of $95. An additional variable cost is incurred for accommodation to attend the national judging competition.

Agricultural Economics

Students using computer printing facilities for personal purposes (including personal assignment writing) are charged $11 per 125 pages. Students are advised of these facilities and the charge during training in the use of the computer laboratory.

Other printers are available for students in the University, also with charges applying. Many use their own printers at home.

Students who wish to use overheads in seminars can buy overheads for 50 cents per sheet. Students are advised in classes, where relevant. Fees are set to cover only direct and allocatable costs with no surplus.

In the units Economic Environment of Australian Agriculture and Applied Commodity Modelling, printed material is made available at the cost of printing. Purchase is optional. This is in addition to the unit of study handbooks supplied. Copies are held in the Library.

Scholarships and prizes

See also the section on financial assistance in the University of Sydney Diary.

HSC scholarships and prizes

These scholarships and prizes are awarded on the basis of HSC results and no applications are required. Further information can be obtained from the Scholarships Office.

University bursaries

Bursaries are awarded on the combined grounds of financial need and academic merit and application may be made in March to the Financial Assistance Office (open Monday to Thursday from 9.30 am to 2.30 pm). In addition interest-free loans are available to students who are able to demonstrate financial need.

Other scholarships and prizes

Distinguished Undergraduate Scholarships and Undergraduate Scholarships

Both scholarships are provided by the University of Sydney from University funds and funds donated by previous students of the University (the Alumni). The Distinguished Undergraduate Scholarships are currently valued at $8,000 per year while the Undergraduate Scholarships are valued at $5,000 per year for the normal full-time duration of a student's first degree, subject to satisfactory progress. These scholarships are available to applicants who:

- are citizens or permanent residents of Australia;
- Undergraduate Scholarships - are taking the NSW Higher School Certificate (HSC) or approved equivalent secondary school examination in 2000 and expect to achieve a Universities Admission Index (UAI) of at least 95;
- Distinguished Undergraduate Scholarships - are taking the NSW Higher School Certificate (HSC) or approved equivalent secondary school examination in 2000 or completed it in 1999 and have not commenced any university study. Applicants must have or expect to achieve a Universities Admission Index (UAI) of at least 98;
- have personal attributes such as creativity, leadership, self-motivation and good communication skills.

Application forms and further information can be obtained from school career advisers in July, or from the University's Scholarships Office. Applications close on 30 September.

Sydney ***Scholarships***

A number of Sydney Scholarships will also be available in specific faculties in 2001. These scholarships are valued at $2,000 each and for one year. Applicants for The University of Sydney Distinguished Undergraduate and Undergraduate Scholarships will be considered. However, no separate/ additional apphcations are required.

Other Scholarships

These include Council of Education Scholarship, The Freemasons' Scholarship, Martin Mcllrath Scholarships for Undergraduates in Agriculture, Spero Gravas Scholarship and James Robinson Orange Memorial Prize. Information on these scholarships is available from the Scholarships Office and applications close end of April.

Prize compositions

Details of these may be obtained from the Scholarships Office with whom applications generally close in the first week of second semester.

Faculty resolutions

A candidate who presents for re-examination in any subject shall not normally be eligible for any prize or scholarship awarded in connection with such examination.

Prize or scholarship	Value $	Qualification
AB ARE Prize	300	Highest honours aggregate at graduation in BAgrEc
Belmore Scholarships	500	Proficiency in First Year
	500	Proficiency in First Year Chemistry
	500	Proficiency in Second Year
	500	Proficiency in Soil Science 2 and AgriculturalChemistry 2
Brian G. Davey Memorial Scholarships in Soil Science	400	Proficiency in Soil Science 2 and 3
Bruce Davidson Prize in Resource Economics	300	Proficiency in an essay or diesis in natural resource economics
John Arthur Cran	100	Proficiency in HSC
Dairy Research Foundation	400	Proficiency in Fourth Year Animal Production
John Neil Downing Memorial	350	Proficiency in professional experience
John and Beatrice Froggatt Agricultural Entomology	1000	Proficiency in Agricultural Entomology 1 and Fourth Year
W.W. Froggatt Memorial	200	Proficiency in Agricultural Entomology project in Fourth Year
Golden Jubilee Scholarship in Agri. Science	500	Proficiency in Third Year
Clifford Dawson Holliday	300	Proficiency in Third Year Examinations
D.L.Jackson	400	Proficiency in Agricultural Science I or Horticultural Science 1
EC. McCleery Memorial Award	200	Fellowship and Leadership in the Faculty (Third Year students)
Martin Mcllrath Scholarships!	490	Proficiency in HSC and First, Second and Third Years (men only). Preference to sons of ex-servicemen
Theresa G. Makinson	100	Proficiency in Horticultural Science in Fourth Year
National Farmers' Federation	150	Proficiency in Fourth Year in degree of Bachelor of Science in Agriculture, Bachelor of Agricultural Economics or Bachelor of Horticultural Science
Sibella Macarthur Onslow	200	Proficiency in Agronomy in Fourth Year
AANRM Prize	n.a.	Proficiency in CropScience 2 and Soil Science 2
F.L. Partridgef	400	For students in Third and Fourth Years in need of financial assistance
Poultry Research Foundation	400	Proficiency in Fourth Year Animal Production
Ridley AgriProducts Prize in Animal Nutrition	250	Proficiency in Animal Nutrition 3
Joyce Winifred Rouse	40	Proficiency in Agricultural Chemistry in Fourth Year
SUAGA Prize	n.a.	President, AGSOC
Sydney Chinese Association	100	Proficiency in Microbiology 3 (Science) or Agricultural Microbiology 3
G.W. Walker Memorial Essay	100	Most proficient essay in the unit Applied Marketing
Professor W.L. Waterhouse	80	Proficiency in Agricultural Genetics 2 & Plant Disease 3
Sir Robert Watt Memorial	80	Proficiency in Crop Science 2
Weed Society of N.S.W.	100	Proficiency in Weed Science
N.H. White Memorial Prize	100	Proficiency in Plant Pathology in Fourth Year
A.R. Woodhill Prize in Entomology	300	Proficiency in Agricultural Entomology in First Year
Arthur Yates and Co. Pty Ltd (2 prizes)	100	Proficiency in Agricultural Genetics in Fourth Year
	100	Proficiency in Horticultural Science in Fourth Year

fApplicant required to submit an application to the Scholarships Office.

ABARE Prize

Established in 1995 by ABARE for a prize in support of academic excellence in the field of agricultural economics. Awarded annually on the recommendation of the Head of the Department of Agricultural Economics to the student who attains the highest honours aggregate on graduation in the degree of Bachelor of Agricultural Economics. Value, $300.

Belmore Scholarships

In 1871 the Earl of Belmore made a gift for the purpose of providing a gold medal for proficiency in geology and practical chemistry with special reference to agriculture. His Lordship stated that should additional branches connected with agriculture be thereafter taught in the University, the examination for the medal might be made to embrace them. Upon the establishment of a Chair of Agriculture in 1910, it was decided to award the income of the fund as a scholarship. Four scholarships of $500 each are awarded annually on the recommendation of the Dean of the Faculty of Agriculture to students in the Faculty. Two are tenable by students enrolling in the second year of the BHortSc, BLWSc or BScAgr degree, the first being awarded to the student showing greatest proficiency in the first-year examinations and the second awarded for greatest proficiency in the first-year Chemistry units of study. A student enrolling in the second year of the BResEc degree is also eligible for the first-year chemistry scholarship. A further two are tenable by students enrolling in the third year of the BHortSc, BLWSc or BScAgr degree, the first being awarded to the student showing greatest proficiency at the second year examinations and the second awarded for greatest proficiency in Soil Science 2 and Agricultural Chemistry 2. In each case the student's work must be of sufficient merit. Two scholarships may *not* be awarded to the same person in any one year.

John Arthur Cran Prize

Established in 1959 by the offer of an annual donation by Mrs Esther Cran in memory of her husband John Arthur Cran. In 1983 the University received a bequest of $1000 from Mrs Cran with the intent that the prize be awarded in perpetuity.

The prize may be awarded annually on the recommendation of the Dean of the Faculty of Agriculture to the most proficient candidate at the Higher School Certificate or equivalent examination who enrols full-time in the first year of candidature for one of the following degrees Bachelor of Science in Agriculture, Bachelor of Agricultural Economics, Bachelor of Horticultural Science, Bachelor of Land and Water Science or Bachelor of Resource Economics provided that the student's work is of sufficient merit. Value, $100.

Dairy Research Foundation Prize in Animal Science

Established in 1977 by an offer from the Dairy Science Research Foundation of an annual donation for a prize in animal science with particular reference to dairying.

Awarded annually in the Faculty of Agriculture on the recommendation of the Head of the Department of Animal Science to the student enrolled in the fourth-year subject Animal Production who achieves the highest proficiency with particular reference to dairying, provided the student's work is of sufficient merit. Value, $400.

Bruce Davidson Prize in Resource Economics

Established in 1995 by donations from the family of Bruce Robinson Davidson and former students and colleagues in recognition of his pioneering research in water resource economics in Australia, and as a tribute to his outstanding contributions as a teacher and researcher in agriculture and agricultural economics.

Awarded annually, on the recommendation of the Head of the Department of Agricultural Economics, to an undergraduate student enrolled in the Faculty of Agriculture who submits an outstanding essay or diesis in the area of natural resource economics. Value $300.

Brian G. Davey Memorial Scholarships in Soil Science

Established in 1989 at the request of Mrs Leith Davey in memory of her husband Dr Brian G. Davey, Senior Lecturer in Soil Science until his death in 1989.

Two scholarships may be awarded annually on the recommendation of the Head of the Department of Agricultural Chemistry and Soil Science. One may be awarded to the most proficient student who achieves the highest aggregate mark in the units of study Soil Science 2 and Soil Science 3 in the Faculty of Agriculture and who enrols in the fourth year subject Soil Science 4 for a Bachelor of Science in Agriculture degree, provided the student's work is of sufficient merit. The other scholarship may be awarded to the most proficient student who achieves the highest aggregate mark in the units of study Soil Science 2 and Soil Science 3 in the Faculty of Science who enrols in Soil Science Honours for a Bachelor of Science degree, provided the student's work is of sufficient merit. The scholarships may be shared. If sufficient funds are available more than two scholarships may be awarded in any one year. Value, $400 per annum each.

Clifford Dawson Holliday Prize

Founded in 1954 by a bequest of £ 1000 from Andrew Holliday for a prize to be known as the Clifford Dawson Holliday Prize in Agriculture. Awarded annually to the most proficient candidate at the third year annual examinations in the Faculty of Agriculture. Value, $300.

John Neil Downing Memorial Prize

Established by R.G. Downing BSc(Agr), by gifts of £25 in 1948 and £500 in 1949, for a prize in memory of his son, Lieutenant John Neil Downing, who was killed in action.

The prize, which may be shared, is awarded annually on the recommendation of the Dean of the Faculty of Agriculture to the student in the Faculty of Agriculture who shows greatest proficiency in the professional experience requirement, provided the student's work is of sufficient merit. Value, $350.

John and Beatrice Froggatt Prize

Established in 1986 by a bequest of $10,000 from the estate of Mrs Beatrice E. Froggatt of Killara who died in 1985.

Awarded annually on the recommendation of the Head of the Department of Crop Sciences to the student with the highest aggregate in the units of study Agricultural Entomology 1 and Fourth year Agricultural Entomology, provided that the student's work is of sufficient merit. The prize may be shared. Value, $1000.

W.W. Froggatt Memorial Prize

Established in 1979 by a bequest of $1000 from the estate of Joyce Chiosso Froggatt in memory of her father.

Awarded annually on the recommendation of the Head of the Department of Crop Sciences to the student in fourth year Agricultural Entomology who shows the greatest proficiency in a research project, if the student's work is of sufficient merit. Value, $200.

Golden Jubilee Scholarship in Agricultural Science

In 1960, which was the golden jubilee year of the foundation of the School of Agriculture in this University and of the Australian Institute of Agricultural Science, a committee was formed to raise a fund to endow an annual scholarship in agricultural science.

Established in 1961 by the gift of £1574 18 s 0 d from the Jubilee Scholarship Fund Appeal. Awarded annually for the study of agricultural science in the fourth year, to a student at the end of third year, on the basis of academic achievement, application to the course of study and aptitude for agricultural science. Value, $500.

D.L. Jackson Memorial Prize

Established in 1975 by public subscription in memory of D.L. Jackson, Senior Lecturer in the Department of Agronomy and Horticultural Science.

To be awarded annually on the recommendation of the Head of the Department of Crop Sciences after consulting the professor most concerned to the most proficient student in the unit of study Agricultural Sciencel, Horticultural Science 1 or Land and Water Science 1 provided that the candidate's work is of sufficient merit. Value, $400.

F.C. McCleery Memorial Award

Established in 1979 by a series of donations over a number of years by the Reverend A.B. Catley, a graduate of the Faculty of Agriculture, for an award in that faculty. The award honours the memory of EC. McCleery, BScAgr (1925), the former Chief Biometrician in the N.S.W. Department of Agriculture. F.C. McCleery was judged by his peers, both when a student at this University and in his later professional career, to be a than of great integrity who contributed greatly in both fields by his leadership and fellowship. Throughout his professional career he remained interested in a wide range of subjects from classical Greek literature to modern theology.

The award shall be made annually after a ballot, conducted by the Dean, of third year students in the Faculty to the person amongst their number who they judge at that ballot to have contributed most to the life of the Faculty by way of leadership and fellowship. Only those students who have completed the first two years of their degree course in minimum time shall be eligible for nomination. Value, $200.

Theresa G. Makinson Prize

Established in 1972 by the donation of $500 from Miss K.J. Laurence, to establish a prize in memory of her aunt, Theresa Genevieve Makinson, 1885-1939.

Awarded annually, on the recommendation of the Head of the Department of Crop Sciences after consulting the professor most concerned, to the most proficient student in fourth year Horticultural Science, provided that the candidate's work is of sufficient merit. Value, $100.

National Farmers' Federation Prize

Established in 1987 by the offer of an annual donation by the National Farmers' Federation for a prize to encourage excellence in agricultural studies.

Awarded annually on the recommendation of the Dean and with the approval of the Faculty's Board of Examiners to the student who attains the highest honours aggregate on graduation in one of the following degrees Bachelor of Science in Agriculture, Bachelor of Agricultural Economics or Bachelor of Horticultural Science.

The prize may be shared. Value, $150.

Sibella Macarthur Onslow Memorial Prize

Established in 1944 by a gift of £360 from members of the Victorian League of New South Wales and other friends of Miss Sibella Macarthur Onslow.

Awarded annually on the recommendation of the Head of the Department of Crop Sciences after consulting the professor most concerned for proficiency in the Fourth year subject Agronomy, provided the student's work is of sufficient merit. Value, $200.

Australian Association of Natural Resource Management (AANRM) Prize

Established in 1997 by an offer from the Soil and Water Conservation Association of Australia (NSW Branch) of an annual award of a certificate and a twelve month membership to the NSW Branch of SAWCAA. The prize was renamed in 1998 when the association changed its name to the Australian Association of Natural Resource Management. The prize was amended to an annual award of a certificate and a twelve month membership to the NSW Branch of AANRM.

Awarded annually on the recommendation of the Dean of the Faculty of Agriculture to the student in the Faculty of Agriculture who shows greatest proficiency in Soil Science 2 and Crop Science 2, provided the student's work is of sufficient merit.

F.L. Partridge Prize

Founded in 1928 by a gift of shares from an anonymous donor to establish the 'F.L. Partridge Endowment' in memory of F.L. Partridge. The endowment is used to provide a prize in the Faculty of Agriculture in accordance with the following conditions:

1. The F.L. Partridge Prize shall be awarded to undergraduates in the Faculty of Agriculture who have passed the second year examination in that Faculty.
2. The prize shall be of the annual value of $400 and shall be tenable in the third and fourth years of the agricultural curriculum, provided the holder is diligent and of good conduct and passes creditably all the examinations of the course.
3. The prize will only be awarded to students in such necessitous circumstances that they would have difficulty in completing the agricultural curriculum without some financial assistance.
4. Where there are two or more candidates who fulfil the last condition the prize will be awarded to the student who at the end of the second or third year has the best academic record.
5. Any unexpended income shall be used to create a fund for the carrying out of such research work within the Faculty as the Faculty may determine.
6. Applications for the F.L. Partridge Prize must reach the Registrar before the end of March in each year.

Poultry Research Foundation Prize in Animal Science

Established in 1977 by an offer from the Poultry Science Research Foundation of an annual donation for a prize in Animal Science with particular reference to Poultry.

Awarded annually in the Faculty of Agriculture on the recommendation of the Head of the Department of Animal Science to the student enrolled in the fourth year subject Animal Production who achieves the highest proficiency with particular reference to poultry, provided the student's work is of sufficient merit. Value, $400.

Ridley AgriProducts Prize in Animal Nutrition

Established in 2000 by the offer of an annual donation by Ridley AgriProducts to promote closer links with students in the BScAgr degree. Awarded annually on the recommendation of the Head of the Department of Animal Science to the student who is a permanent resident or citizen of Australia and who demonstrates the greatest proficiency in the unit Animal Nutrition 3, provided the work is of sufficient merit. Value $250

Joyce Winifred Rouse Prize

The prize was established in 1987 by a donation from Randolph G. Rouse on behalf of his wife.

Awarded annually on the recommendation of the Head of the Department of Agricultural Chemistry to the most proficient student in fourth year Agricultural Chemistry in the BScAgr degree or the BSc degree provided that the candidate's work is of sufficient merit. Value, $40.

Sydney University Agricultural Graduates' Association Prize

Established in 1994 by an offer of an annual donation from the Sydney University Agricultural Graduates' Association to recognise undergraduates who contribute time and effort to the leadership and fellowship of agricultural students.

The prize shall be awarded annually to the student elected as President of the Sydney University Agricultural Society. The prize shall be a commemorative object selected by SUAGA.

G.W.Walker Memorial Essay Prize

Founded in 1944 and 1945 by amounts of £50 each received from the New South Wales Council of Agriculture Associations, Lindley Walker Wheat Coy Ltd, and the Flour Mill-Owners' Association of New South Wales, as a memorial to George W. Walker.

Awarded annually on the recommendation of the Head of the Department of Agricultural Economics to the student who presents the best essay in the unit of study Applied Marketing, provided the essay is of sufficient merit. Value, $100.

Professor W.L. Waterhouse Prize

In 1953 a sum of £150 was handed to the Senate by the Sydney University Agricultural Graduates' Association as part of subscriptions received in making a presentation to Professor W.L. Waterhouse on his retirement. The money is to be used to establish a prize to perpetuate the name and work of Professor Waterhouse and to continue the prize donated annually by Professor Waterhouse during his tenure of the Research Chair of Plant Pathology and Agricultural Botany.

Awarded annually to the most proficient student in the units of study Agricultural Genetics 2 and Plant Disease 3, provided that the candidate's work is of sufficient merit. Value, $80.

Sir Robert Watt Memorial Prize

Established in 1966 by the gift of $500 from Lady Madge Watt and her daughter in memory of Emeritus Professor Sir Robert Watt, the first Professor of Agriculture at this University.

Awarded annually on the recommendation of the Head of the Department of Crop Sciences, after consulting the professor most concerned, to the most proficient student in the second year unit Crop Science 2, provided the candidate's work is of sufficient merit. Value, $80.

Weed Society of New South Wales Prize

Founded in 1971 by the offer of an annual gift from the Weed Society of New South Wales.

Awarded annually on the recommendation of the Head of the Department of Crop Sciences after consulting the professor most concerned to the most proficient undergraduate student in the area of Weed Science currently assessed in the unit of study Crop Protection, provided that the candidate's work is of sufficient merit. Value, $100.

Sydney Chinese Association Prize

Established in 1969 by a gift of $200 by the Sydney Chinese Association.

Awarded annually on the recommendation of the Professor of Microbiology to the third year student in the Faculty of Science or Agriculture who shows the greatest proficiency in the unit of study (MICR 3001 or 3901) and (MICR 3002 or 3902) Microbiology 3 or MICR 3102 Agricultural Microbiology 3. Value, $100.

N.H.White Memorial Prize

Established in 1995 by donations from the former students and colleagues of Neville Hewlett White as a tribute to his outstanding contributions as a teacher and researcher in Plant Pathology. Awarded annually on the recommendation of the Head of Department of Crop Sciences to an outstanding student who specialised in the discipline of Plant Pathology within the fourth year of the BScAgr program. Value, $100.

A.R.Woodhill Prize in Entomology

Established in 1966 by the gift of $1000 from Mrs Woodhill and the colleagues and students of Dr A.R. Woodhill.

Awarded annually on the recommendation of the Head of the Department of Crop Sciences to the most proficient student in the unit of study Agricultural Entomology 1 offered in the degrees of Bachelor of Science in Agriculture or Bachelor of Horticultural Science provided that the candidate's work is of sufficient merit. The prize may be shared. Value, $300.

Arthur Yates and Co. Pty Ltd Prize

EstabUshed in 1977. Two prizes of $100 each are awarded annually, the first on the recommendation of the Head of the Department of Crop Sciences after consulting the professor most concerned to the most proficient student in Horticultural Science in Fourth Year, provided that the candidate's work is of sufficient merit, and the second on the recommendation of the Head of the Department of Crop Sciences after consulting the professor most concerned to the most proficient student in Agricultural Genetics in Fourth Year, provided that the candidate's work is of sufficient merit.

Undergraduate scholarships

James S. Ashton Memorial Scholarship

Established in 1995 by donations through the initiative of Professor Fred and Claire Hilmer with the assistance of Susan and James W Ashton in memory of their son James S. Ashton (BScAgr, 1993), to encourage and assist outstanding undergraduate students in Agriculture.

The scholarship may be awarded annually, on the recommendation of the Dean on the advice of a Faculty Selection Committee, to a student who enrols full time in the Fourth Year of the BScAgr degree, provided the student's work is of sufficient merit. The student will show potential for making a significant contribution to the application of science and technology to the animal industries. While the student's overall academic record must be of sufficient merit it is not intended that the scholarship be limited to the applicant with the strongest academic record. Additional criteria will include performance in project work and work experience in animal science and related areas and participation in community and University activities which would demonstrate evidence of integrity of character, diligence and regard for fellow students. At the time of award, the recipient may not be in receipt of any other substantial scholarship award. Value, $3000.

Commonwealth Bank of Australia Customer Service Division Scholarship

The CBAhas offered two-year undergraduate scholarships. The first was awarded in 1996 to a Third Year BAgrEc student. Assuming a high calibre of applicants, there will be a continuum of two current scholarships with a new one commencing each year. The linking of the scholarship to paid vacation employment, between third and fourth year, which can count as professional experience, is a particularly attractive aspect of the scholarships.

This scholarship has been established by the Commonwealth Bank to allow industry to contribute to the tertiary education of students destined for a career in business and finance and with relevance to the agricultural sector. Scholarship holders will attain a more relevant background on completion of their degree, a significant insight into the industry and as a result a jump start in their chosen career path. Customer service in the rural sector is provided through a regional delivery network of Business Banking Centres (BBCs) and Branches in all states. Structured career opportunities are provided in the BBCs for agricultural graduates. Ultimately, scholarship holders could feed directly into the Commercial Banking Graduate Program. It is vital that the successful candidate is interested in a career in commercial lending, specifically relationship management or credit analysis.

Terms and conditions

1. The Commonwealth Bank of Australia (CBA) Customer Service Division, awards the Commonwealth Bank of Australia (Customer Service Division) Scholarship to a student undertaking the Bachelor of Agricultural Economics degree full-time at the University of Sydney.
2. The Faculty of Agriculture will prepare a short-list of applicants, based on academic performance and relevant criteria for consideration by CBA staff.
3. The Scholarship comprises an Award Saver Account to the value of $3,000 per annum to the scholarship holder for the third and fourth years of the degree to assist in the payment of education expenses. The scholarship holder must open an Award Saver Account to receive payment.
4. The scholarship holder must undertake paid vacation employment with CBA between the third and fourth academic years with vacation employment commencing

after the last examination of the year and extending to the week prior to the beginning of lectures of the ensuing academic year.
5. During vacation employment the scholarship holder will be employed on a contract basis.
6. The scholarship holder will forward semester results to Human Resources, Customer Service Division of the CBA as soon as they become available.
7. The CBA can revoke the scholarship at any time if the scholarship holder does not maintain a credit average and/ or performance is unsatisfactory during vacation employment or if any other situation arises which warrants reconsideration of the award of the scholarship, including a change of enrolment not approved by the CBA.
8. Upon completion of studies, the scholarship holder is expected to work for CBA, Customer Service Division, for a reasonable period of time if a suitable full-time position is identified.
9. The scholarship holder will not accept any other scholarship without obtaining prior permission from the CBA.
10. The scholarship holder will not accept employment with a competitor whilst holding the CBA Scholarship.

The Elders Agronomy Scholarship

Elders Ltd has offered two-year undergraduate scholarships. The first was awarded in 1996. Assuming a high calibre of applicants, there could be a continuum of two current scholarships with a new one commencing each year. The linking of the scholarship to paid vacation employment, which can count as professional experience, is a particularly attractive aspect of the scholarships.

Terms and conditions

1. Elders Ltd awards the Elders Agronomy Scholarship to a third year full-time Bachelor of Science in Agriculture or Bachelor of Horticultural Science student. The scholarship will be shared on a competitive basis with the University of New England, normally with one scholarship between the two Universities each year.
2. The scholarship will be awarded on the basis of the applicant's career aspirations, interpersonal and communication skills, initiative, level of self motivation and academic performance in first and second year. The Faculty of Agriculture will prepare a short-list of applicants, based normally on a minimum WAM of 65 (credit level), for joint interview by Elders staff and one or more nominated members of the Faculty of Agriculture. (An applicant who did not have a minimum WAM of 65, but who provided evidence that they met all other criteria, would be eligible for short-listing).
3. The scholarship comprises four payments of $1500 payable at the beginning and middle of the scholarship holder's third and fourth years of study (April and September).
4. The scholarship holder will forward semester results to Elders NSW Merchandise Manager as soon as they become available.
5. The scholarship holder will consult with the Faculty and the Elders NSW Merchandise Manager prior to selection of any substantial elective component of the coursework.
6. The scholarship holder must undertake paid vacation employment with Elders Ltd between the second and third (4 weeks) and the third and fourth (8 weeks) academic years.
7. During vacation employment the scholarship holder will be employed as a full-time staff member of Elders Ltd, at a location selected by the company following consultation with the scholarship holder.
8. The Faculty and Elders Ltd expect the scholarship holder to undertake limited extracurricular activities and training, particularly, viz. public speaking and presentation skills, a significant collection of common crop weeds, developing a network of referees and Agsafe accreditation.
9. Elders Ltd reserves the right to revoke the scholarship at any time, following consultation with the Faculty of Agriculture, if the scholarship holder does not maintain a credit average and/or performance is unsatisfactory during vacation employment or if there is a substantive change in enrolment which affects the basis of eligibility.
10. The scholarship holder will not accept any other scholarship without prior permission from the Faculty and Elders Ltd.
11. Upon completion of studies the scholarship holder is expected to work for Elders Ltd for a reasonable period of time if a suitable full-time position is identified.

The Incitec Scholarship

[Suspended in 1999-2000. Under review in 2001]

Incitec Ltd has offered two-year undergraduate scholarships. The first was awarded in 1997. Assuming a high calibre of applicants, it is envisaged that there would be a new scholarship commencing each year. The linking of the scholarship to paid vacation employment, which can count as professional experience, is a particularly attractive aspect of the scholarship.

Terms and conditions

[Revised terms are being considered]
1. The Faculty of Agriculture awards the INCITEC Scholarship to a third year full-time Bachelor of Science in Agriculture or Bachelor of Agricultural Economics student of the University of Sydney.
2. The scholarship will be awarded on the basis of the applicant's career aspirations, interpersonal and communication skills, initiative, level of self motivation and academic performance in first and second year. The Faculty of Agriculture will prepare a short-list of applicants, based normally on a minimum WAM of 65 (credit level), for joint interview by INCITEC staff and one or more nominated members of the Faculty of Agriculture. (An applicant who did not have a minimum WAM of 65, but who provided evidence that they met all other criteria, would be eligible for short-listing).
3. The Scholarship comprises two payments of $3,000 payable at the beginning of the scholarship holder's third and fourth years of study to assist in the payment of education expenses.
4. The scholarship holder will forward semester results to INCITEC as soon as they become available.
5. The scholarship holder will consult with the Faculty and INCITEC prior to selection of any substantial elective component of the coursework.
6. The scholarship holder must undertake paid vacation employment with INCITEC between the second and third (6-8 weeks) and the third and fourth (6-8 weeks) academic years or 12-16 weeks at some vacation time mutually agreeable to TNCITEC and the student.
7. During vacation employment the scholarship holder will be employed as a full-time staff member of INCITEC, at a location selected by the company following consultation with the scholarship holder.
8. The Faculty and INCITEC expect the scholarship holder to undertake limited extracurricular activities and training, particularly public speaking and presentation skills, and develop a network of referees.
9. The Faculty reserves the right to revoke the scholarship at any time, following consultation with INCITEC, if the scholarship holder does not maintain a credit average and/ or performance is unsatisfactory during vacation employment or if there is a substantive change in enrolment which affects the basis of eligibility.
10. The scholarship holder will not accept any other scholarship without prior permission from the Faculty and INCITEC.

Native Cockroach Research Scholarship

Established by Dr H A Rose in 1996 for Entomology research to encourage and assist students interested in Australian native cockroaches. The scholarship will be awarded on the basis of the applicant's career aspirations, written communication

skills, initiative, level of self motivation, commitment to the area and academic performance.

A candidate is expected to:

- Enrol full-time in the Fourth Year of the BScAgr degree.
- Specialise in Agricultural Entomology 4.
- Undertake his/her project (16 or 24 credit points) on some aspect of the biology of native cockroaches.
- normally have completed the first three years in minimum time, have a minimum Second/Third year WAM of 65 (credit level) and be strong enough academically to complete the degree over the four year period. (An applicant who did not have a minimum WAM of 65, but met all other criteria, would be eligible for consideration.)

An interview will be conducted, if necessary, for ranking.

Newports Nursery Scholarship in Horticulture

Newports Nursery has offered two-year undergraduate scholarships. The first was awarded in 1998. Assuming a high calibre of applicants, it is envisaged that there would be a new scholarship commencing each year. The Unking of the scholarship to paid vacation employment, which can count as professional experience, is a particularly attractive aspect of the scholarship.

Newports Nursery, situated at Winmalee in the foothills of the Blue Mountains, is one of Australia's largest wholesale nurseries. The company is well known for Flower and Vegetable seedlings as well as potted lines. Newports has an intensive Research and Development Department. Its Propagation Department is responsible for the vegetative propagation of several million young plants annually.

Terms and conditions

1. The Faculty of Agriculture awards the Newports Nursery Scholarship in Horticulture to a third year full-time Bachelor of Horticultural Science or Bachelor of Science in Agriculture student of the University of Sydney.
2. The scholarship will be awarded on the basis of the applicant's demonstrated commitment to horticulture, career aspirations, interpersonal and communication skills, initiative, level of self motivation and academic performance in the first three semesters of enrolment. The Faculty of Agriculture will prepare a short-list of applicants, based normally on a minimum WAM of 65 (credit level), for joint interview by Newports staff and one or more nominated members of the Faculty of Agriculture. (Applicants who do not have a minimum WAM of 65, but who provided evidence that they meet all other criteria, will be eligible for short-listing).
3. The scholarship comprises four payments of $1,500 payable at the beginning and middle of the scholarship holder's third and fourth years of study (March and September).
4. The scholarship holder will forward semester results to Newports Nursery as soon as they become available.
5. The scholarship holder will consult with the Faculty and Newports Nursery prior to selection of any substantial elective component of the coursework.
6. The scholarship holder must undertake paid vacation employment with Newports Nursery between the second and third (4-8 weeks) and the third and fourth (4—8 weeks) academic years or 8-16 weeks at some vacation time mutually agreeable to Newports Nurseries and the student.
7. During vacation employment the scholarship holder will be employed as a full-time staff member of Newports Nursery, at a location selected by the company following consultation with the scholarship holder.
8. The Faculty and Newports Nursery expect the scholarship holder to undertake limited extracurricular activities and training, particularly public speaking and presentation skills, and develop a network of contacts in the horticultural industry and in particular in the nursery and related sectors.
9. The Faculty reserves the right to revoke the scholarship at any time, following consultation with Newports Nursery, if the scholarship holder does not maintain a credit average and/or performance is unsatisfactory during vacation employment or if there is a substantive change in enrolment which affects the basis of eligibility.
10. The scholarship holder will not accept any other scholarship without prior permission from the Faculty and Newports Nursery.

NSW Farmers'Association Tertiary Scholarships

You may apply direct to the Association for one of five competitive scholarships available across the State.

A candidate is expected to:

- Have been a full member of the New South Wales Farmers' Association during 1999 and 2000, or have a parent/partner who holds such membership
- Provide information on tertiary academic standards
- Enrol full-time in the 2 nd, 3 rd or 4 th year of a bachelor degree in 2001
- Demonstrated commitment to agricultural/rural communities.

Application forms from the Association at Membership Services on (02) 9251 1700, fax (02) 9221 6913.

Value: in 2001 is $5,000.

Trinity Grammar School Teaching Internship

[Under review for 2001]

Established by Trinity Grammar School in 1997 as a contribution from Independent Education to Tertiary Education to assist high calibre students in pursuing a career as a Secondary Teacher with the School.

A candidate would be expected to:

- Enrol full-time in the Fourth Year of the BScAgr or BSc degree.
- Normally have completed First, Second and Third year in minimum time with a minimum WAM of 65 (credit level) and be strong enough academically to complete the degree over a four year period
- demonstrate evidence of integrity of character, diligence and leadership qualities
- be actively involved in the School's Teaching Internship program, sporting and co-curricular activities
- provide evidence of relevant career goals.

An interview of short-listed candidates is part of the selection process.

Application forms from Trinity Grammar School, Summer Hill ph 02 9581 6000 or the Faculty Offices.

Value: $3,000.

Undergraduate Scholarships in Agriculture

Established in 1991, by funding from companies, organisations and individuals, referred to hereafter as 'cooperating companies', to encourage and assist candidates for the degrees of Bachelor of Agricultural Economics, Bachelor of Science in Agriculture, Bachelor of Horticultural Science, Bachelor of Land and Water Science or Bachelor or Resource Economics.

The scholarship shall be awarded under the following conditions:

1. Each scholarship shall be named an Undergraduate Scholarship in Agriculture, except where a 'cooperating company' requests that its name be used as an identifier within the scheme.
2. The scholarships shall be open to citizens and permanent residents of Australia who qualify in the final year of secondary schooling to enter the Faculty of Agriculture at the University of Sydney.

Tenure

3. (a) Each scholarship shall be tenable for the specific agricultural degree for which it is offered, where applicable, and shall not be transferable to the other degree except in exceptional circumstances.

(b) The scholarships shall be tenable for the duration of each recipient's degree program, provided that the scholar meets all the obligations of the program and maintains satisfactory academic progress.

Advisory Committee

4. (a) There shall be an Advisory Committee consisting of the following persons:
   (i) no fewer than five representatives of separate cooperating companies;
   (ii) no fewer than two heads of departments in the Faculty of Agriculture including the Head of the Department of Agricultural Economics (or their nominees);
   (iii) no more than three members of the Institute of Advanced Studies within the Faculty of Agriculture;
   (iv) the Dean of the Faculty of Agriculture; and
   (v) the Executive Director of the Undergraduate Scholarships in Agriculture Program.
   (b) The Advisory Committee shall elect its own chairperson.
   (c) The Advisory Committee shall advise the Faculty on the conduct and management of the program, including scholar selection, the nature and organisation of the industrial experience component, and such other matters as it consider pertinent to the effective operation of the program.
   (d) The Executive Director of the program shall be a member of the Faculty, nominated by the Dean, appointed by the Advisory Committee.
   (e) The Executive Officer of the program shall be a member of the University's administrative staff, nominated by the Dean, and shall attend meetings of the Advisory Committee.

Annual meeting of cooperating companies

5. There shall be an annual general meeting of cooperating companies during the first semester of each academic year, when:
   (a) the Advisory Committee shall report on the operation of the program over the previous year;
   (b) the membership of the Advisory Committee for the coming year shall be determined; and
   (c) any matters relating to the program may be raised and decisions thereon made for implementation by the Advisory Committee.

Awarding of the scholarships

6. (a) The scholarships shall be awarded on the basis of academic merit (as indicated by the applicants' performance at the N.S.W. Higher School Certificate Examination, or equivalent), leadership potential and personal qualities.
   (b) The scholarships shall be awarded on the recommendation of selection panels consisting of at least one representative from cooperating companies and at least one member of the Faculty appointed by the Dean.
7. There shall be no bonding or other commitment to employment between a cooperating company and any scholar.
8. A scholarship is intended for a continuous four-year degree program, but the Advisory Committee may consider a request for an interruption in a scholar's progress towards the Bachelor degrees for some exceptional purpose, and, if such request is approved, the scholarship shall be suspended during such interruption.

Cost

9. (a) Cooperating companies shall make a donation to the University of Sydney Undergraduate Scholarship in Agriculture Program, for each year and for each scholarship place supported, comprising the annual scholarship stipend together with an administration levy of $600 + GST.
   (b) Transfers of funds from cooperating companies to the University shall be made by 31 January in the year to which the scholarship place applies.
   (c) The administrative levy will be reviewed each year.

Benefits to cooperating companies

10. Each current cooperating company shall be entitled to:
   (a) access to the whole pool of Undergraduate Scholars in Agriculture for professional work experience in the cohort or cohorts contemporaneous with the year or years of its support; and
   (b) inclusion of the company's name on a roll of cooperating companies to be set up in the Faculty Office.

Value and payments

11. (a) The value of the scholarship stipend in 2001 shall be $6200 per annum.
   (b) The value of the scholarship stipend shall be adjusted annually by the Advisory Committee after considering movements in the consumer price index.
   (c) A scholarship shall run from 1 March to the following 30 November.
   (d) The scholarship payments shall be made at regular intervals.

Facilities, organisations and student societies

Macintosh Computer Laboratory

This computer laboratory is located in the R D Watt Building. It may be used by arrangement with the Head of the Department of Agricultural Economics (or nominee) by undergraduate and postgraduate students enrolled in the Faculty of Agriculture.

Ross Street Computer Laboratory

This PC computer laboratory is located in the Ross Street Building. It may be used by arrangement with Associate Professor M.E. O'Neill (or nominee) by undergraduate and postgraduate students enrolled in the Faculty of Agriculture.

Libraries

University of Sydney Library

http://www.library.usyd.edu.au/

A large network of 24 Libraries supports staff and students of the University of Sydney. The specialist libraries for research in Agriculture are Badham Library (covers agriculture, agricultural economics, agricultural chemistry, soil science, biological sciences, genetics, botany and veterinary science) and Geosciences Library (covers earth sciences and geography including GIS). Fisher Library holds resources of interest to first year students and also the economics collection.

The Library homepage is located at http://www.library.usyd.edu.au/ and provides access to services including the Library catalogue and databases that index journal articles. Key databases for Agriculture are CAB Abstracts, Agricola, Biological Abstracts and ABOA. Passwords to access these databases from outside campus are available to staff and students of the University. Please contact the Library for more information.

Ground Floor, Badham Building A16, Science Road,
Camperdown Campus, University of Sydney NSW 2006

Phone: (02) 9351 2728
Fax: (02) 9351 3852
Email: badham@library.usyd.edu.au
Opening hours: 8.30 am - 7.30 pm Monday to Friday, 10 am - 5 pm Saturdays during semester time; 9 am - 5 pm out of semesters.

Check the web at http://www.library.usyd.edu.au/Services/Libraries/Badham/index.html for information on the current opening hours.

Please check http://www.library.usyd.edu.au/Services/Libraries/Geosciences/index.html for details of the Geosciences Library and http://www.library.usyd.edu.au/Services/Libraries/Fisher/index.html for details about Fisher.

Mathematics Learning Centre Lecturer-in-charge Jacqueline M. Nicholas

The Mathematics Learning Centre offers help to students who enter the University with insufficient preparation in mathematics to enable them to cope with the mathematical requirements of their chosen course.

In the Faculty of Agriculture, courses in Agricultural Economics, Biometry, Economics and Econometrics all assume a certain level of knowledge of mathematics. Generally, students entering the Faculty are assumed to have taken HSC 2-unit mathematics or its equivalent. If you know that you lack this assumed knowledge, or if you are doubtful whether you are well enough prepared, you should contact the Mathematics Learning Centre.

Staff at the Centre can help you decide which topics you need to do extra work on. Resources are provided for individual study, with guidance from the Centre's staff, and small tutorials can be arranged for students who are having difficulties. Introductory and bridging courses are organised during the summer and throughout the year.

The Centre is on the fourth floor of the Carslaw Building, Room 455. Any student seeking assistance should call at the Centre, or phone (02) 9351 4061.

Faculty societies

The Sydney University Agricultural Society

AgSoc is an association for the undergraduates of the Faculty of Agriculture, as well as students from rural backgrounds and anyone with an interest in Agriculture. It is run by a student-elected committee from within the faculty, which organises social and sporting events. Details of how to join will be explained during Orientation Week.

Why should you join?

There is a small annual membership fee to become part of AgSoc, which entitles you to vote, hold office, participate in Faculty sports and obtain great discounts to all social functions as well as on the large range of 'Agger' merchandise.

Functions include formal events such as the annual dinner-dance, as well as numerous harbour cruises, barbecues, activity weekends and other informal occasions.

Membership of many faculty societies is compulsory. This is not the case in Agriculture, yet large numbers of students join for every year of their degree, an indication of the close social interaction and love of a good time that makes Agriculture the envy of the larger faculties.

The AgSoc 2001 Committee encourages all members of the Faculty to become involved.

Sydney University Agricultural Graduates' Association

The Sydney University Agricultural Graduates'Association (SUAGA) is a graduate society. All graduates of the Faculty of Agriculture are eligible for membership. Some of the more important aims of the Association are to maintain and foster the relationship between agriculture graduates and the University, to promote social and cultural relationships among the graduates and to take an interest in any matters that may be of benefit to the Faculty of Agriculture.

Plant Breeding Institute within the Faculty of Agriculture

1. (1) There shall be an institute to be known as the Plant Breeding Institute within the Faculty of Agriculture.
   (2) The Institute shall advise the University on the promotion of the science of plant breeding and improvement in the genotypes of crop plants available for commercial cultivation.
2. (1) The governing body of the Institute shall be a Council comprising -
   (a) the Vice-Chancellor and Principal, the Dean of the Faculty of Agriculture and the Professor of Plant Breeding or their nominees;
   (b) the New South Wales Minister for Agriculture or the Minister's representative;
   (c) not more than six trustees of the New South Wales Wheat Research Foundation appointed by the Senate on the recommendation of the Foundation;
   (d) not more than four members of the full-time staff of the University appointed by the Dean on the recommendation of the Faculty of Agriculture.
   (2) Each member shall hold office for a period of three years and shall be eligible for reappointment.
3. (1) The Council shall elect annually from amongst its members an honorary Chairperson.
   (2) All questions which come before the Council shall be decided at any meeting duly convened, at which a quorum is present, by a majority of the votes of the members present.
   (3) The Chairperson at any such meeting shall have one vote.
   (4) At any such meeting eight members shall form a quorum.
4. (1) The Professor of Plant Breeding shall be honorary Director of the Institute, provided that during any vacancy in the Chair of Plant Breeding, the Vice-Chancellor, after consulting the Dean and principal research leaders at Narrabri and Cobbitty, may appoint an honorary Acting Director for a period not exceeding 6 months.
   (2) The Director or Acting Director shall be responsible for administering the following -
   (a) the buildings, equipment, land and staff located at the LA. Watson Grains Research Centre, Narrabri;
   (b) the buildings, equipment, land and staff involved in plant breeding research at the Plant Breeding Institute, Cobbitty.
   (3) The staff of the Institute shall carry out their duties under the direction of the Director or Acting Director.
5. The Director or Acting Director shall report to the Council annually and shall include an annual budget for the ensuing year.
6. (1) The Council and its officers shall have such other powers, duties and functions as may be prescribed by resolution of the Senate provided that all acts of the Council and its officers shall be subject to the by-laws and to any direction which may be given by the Senate.
   (2) The Senate shall provide such administrative, technical and secretarial assistance as it considers proper for the Institute.

The Institute of Advanced Studies within the Faculty of Agriculture

1. The name of the Institute shall be the Institute of Advanced Studies within the Faculty of Agriculture.
2. (i) The Institute shall advise the Senate regarding the funds of the Joane Josephine Harris Bequest, the Thomas Lawrance Pawlett Bequest, the Mrs Christian Rowe Thornett Bequest, the Alexander Hugh Thurburn Fund, the Turland Endowment and the portion of the funds of the F.H. Loxton Bequest which has been allocated to the Faculty of Agriculture.
   (ii) The Institute shall promote the attraction of additional income.
3. (i) The Institute shall further the development of postgraduate studies and research in the Faculty of Agriculture.
   (ii) The Institute shall be responsible for the administration of the scholarship program in the Faculty of Agriculture.
4. The names of the donors shall be perpetuated by their association with the various projects that the Institute initiates.
5. (i) One director of the Institute from each department shall be appointed by the Faculty from the full-time permanent

members of the Departments of Agricultural Chemistry and Soil Science, Agricultural Economics, Animal Science, Crop Sciences, Microbiology and the Plant Breeding Institute.
(ii) The Dean and the Associate Dean (Postgraduate Studies) of the Faculty shall be ex officio directors.
(iii) Directors shall be appointed biennially at the November meeting of the Faculty in the year in which a term ends.
For 1994 and every fourth year thereafter, there shall be one director appointed from each of the Departments of Animal Science, Microbiology and the Plant Breeding Institute. For 1996 and every fourth year thereafter there shall be one director appointed from each of the Departments of Agricultural Chemistry and Soil Science, Agricultural Economics and Crop Sciences.
(iv) Directors shall be eligible for re-appointment.
(v) A casual vacancy in the office of Director shall be filled by the Faculty from the department concerned and the director so appointed shall hold office for the remainder of the term of the person being replaced.
(vi) The office of a director who is unable to attend meetings for six months or more shall be declared vacant; a replacement appointment for director from the department concerned shall be required for the remainder of the term.
(i) The directors shall elect from amongst their number a Chair of the Institute.
(ii) The election of the Chair shall be held at the first meeting of the Institute after 1 January following the biennial appointment of directors and the Chair so elected shall hold office from the time of the election until a successor is elected.
(iii) The Chair shall be eligible for re-election.
(iv) A casual vacancy in the Chair shall be filled by a like method of election of a duly convened meeting of the Institute to be held as soon as conveniently may be and the Chair so elected shall hold office for the remainder of the term of the person replaced.
The directors shall submit recommendations for postgraduate activities to the Faculty for consideration and recommendation to Senate for approval.

CHAPTER 8

Regulations

Resolutions of the Senate

Constitution of The Faculty of Agriculture

[under review]

1. The Faculty of Agriculture shall comprise the following persons:
   (a) the Professors, Readers, Associate Professors, Senior Lecturers, Lecturers and Associate Lecturers, being full-time and fractional permanent or full-time and fractional temporary members of the teaching staff in the Departments of Agricultural Chemistry and Soil Science, Agricultural Economics, Animal Science, Crop Sciences and Microbiology and the Plant Breeding Institute;
   (b) two members of the teaching staff in the categories specified in paragraph (a) in each of the Schools of Biological Sciences, Chemistry and Physics and the Departments of Accounting, Econometrics, Economics, Government and Public Administration, and Veterinary Anatomy, nominated annually by the Head of the Department or School concerned;
   (c) the Deans of the Faculties of Science, Veterinary Science and Economics, and the Principal of the Orange Agricultural College;
   (d) the Director of the LA. Watson Grains Research Centre;
   (e) the Director of the Australian Agricultural Health Unit;
   (f) not more than three persons distinguished in the field of agriculture appointed by the Senate on the nomination of the Dean of the Faculty of Agriculture with the approval of the Faculty;
   (g) not more than four students elected in the manner prescribed by resolution of the Senate; and
   (h) such other persons, if any, being full-time members of the research staff assigned to the departments or units in the Faculty and holding a position at the level of Research Fellow and above, after they have been employed in the Faculty for more than three years.
2. (a) A person appointed pursuant to section 1(f) shall be appointed for a period of three years and shall be eligible for reappointment for one period of three years.
   (b) The persons, if any, appointed under section 1(h) shall be members of the Faculty for so long as they remain full-time members of the senior research staff in the Faculty.

Degrees and Diplomas in the Faculty of Agriculture

1. The degrees in the Faculty of Agriculture shall be:
   (a) Bachelor of Science in Agriculture (BScAgr)
   (b) Bachelor of Agricultural Economics (BAgrEc)
   (c) Bachelor of Horticultural Science (BHortSc)
   (d) Bachelor of Land and Water Science (BLWSc)
   (e) Bachelor of Resource Economics (BResEc)
   (f) Master of Agriculture (MAgr)
   (g) APEC Master of Sustainable Development (APEC MSDevel)
   (h) Master of Science in Agriculture (MScAgr)
   (i) Master of Agricultural Economics (MAgrEc)
   (j) Doctor of Philosophy (PhD)
   (k) Doctor of Science in Agriculture (DScAgr)
   (1) Doctor of Agricultural Economics (DAgrEc).
2. The diplomas in the Faculty of Agriculture shall be:
   (a) Graduate Diploma in Agricultural Economics (GradDipAgrEc)
   (b) Graduate Diploma in Agricultural Science (GradDipAgrSc).

Resolutions of the Senate relating to the Bachelor degrees in the Faculty of Agriculture

Bachelor of Agricultural Economics
Bachelor of Horticultural Science
Bachelor of Land and Water Science
Bachelor of Resource Economics
Bachelor of Science in Agriculture

These Resolutions must be read in conjunction with the Rules of the Senate governing Undergraduate Courses in the University, which set out the requirements for all undergraduate degree courses, and with the relevant Faculty Resolutions.

Requirements for the Degree at Pass Level

To qualify for the award of the degree at pass level students must complete successfully units of study giving credit for a total of 192 credit points; and satisfy the requirements of all other By-Laws, Rules and Resolutions of the University.

Requirements for the Degree at Honours Level

To qualify for the award of the degree at Honours level, students must complete the pass level requirements at the honours level published in the Faculty resolutions relating to the course.

(See Resolutions of the Faculty relating to the Bachelor degrees in the Faculty of Agriculture in this section, following the Postgraduate Resolutions.)

Master of Science in Agriculture
Master of Agricultural Economics
Master of Agriculture

1. A candidate for the degree of Master of Science in Agriculture or for the degree of Master of Agricultural Economics shall proceed by research and submission of a thesis and a candidate for the degree of Master of Agriculture shall proceed by coursework.
2. (1) A candidate for the degree of Master of Science in Agriculture shall proceed to the degree in one of the following departments:
   Department of Agricultural Chemistry and Soil Science
   Department of Animal Science
   Department of Crop Sciences
   Department of Microbiology
   The Plant Breeding Institute.
   (2) A candidate for the degree of Master of Agricultural Economics shall proceed in the Department of Agricultural Economics.
   (3) A candidate for the degree of Master of Agriculture shall proceed in any of the departments in the Faculty or in an interdisciplinary program approved by the Faculty.

Admission to candidature

3. (1) The Faculty of Agriculture may admit to candidature for the degree of Master in the Faculty a graduate of the University of Sydney who has completed units of study acceptable to the Faculty.
   (2) On the recommendation of the Faculty, the Academic Board may admit to candidature in accordance with Chapter 10 of the by-laws a person who has, in the opinion of the Faculty, qualifications equivalent to those required of a graduate of the University of Sydney.
4. The Faculty may require a person admitted as a candidate for the degree of Master of Science in Agriculture or the degree of Master of Agricultural Economics to serve a period of probation for not more than one year and to complete such work during the period as it may prescribe, and at the completion of the period, the Faculty shall review the candidature and the work completed, and may confirm or terminate the candidature. If the Faculty confirms the candidature, it shall be deemed to have commenced at the beginning of the period of probation.

Periods of candidature

5. (1) The minimum period of candidature for a full-time candidate for the degree of Master of Science in Agriculture or the degree of Master of Agricultural Economics shall be two years, except in the case of a candidate who holds the degree of Bachelor of Science in Agriculture or the degree of Bachelor of Agricultural Economics with first- or second-class Honours or another qualification accepted by the Faculty as equivalent, for whom the minimum period shall be one year.
(2) The period of candidature for a full-time candidate for the degree of Master of Agriculture shall be one year.
(3) The maximum period of full-time candidature for the degree of Master of Science in Agriculture or the degree of Master of Agricultural Economics shall be three years, but the Faculty may, in special circumstances, extend a candidature.
(4) The Faculty shall determine the minimum and maximum periods of candidature for part-time candidates on a pro-rata basis.
(5) The Faculty may deem time spent or work done for another research degree of the University of Sydney to be time spent or work done for the degree of Master of Science in Agriculture or the degree of Master of Agricultural Economics if the candidate has ceased to be a candidate for the other degree, and the Faculty may reduce the minimum and maximum periods of candidature accordingly.

Appointment of supervisor

6. The Faculty shall appoint a member of the full-time academic or research staff of the Department in which a candidate for the degree of Master of Science in Agriculture or the degree of Master of Agricultural Economics is proceeding to be the candidate's supervisor. The Faculty may also appoint an associate supervisor of the candidate who may be a member of the academic or research staff of the University, an Honorary Research Associate, or a person with appropriate qualifications in another institution or organisation.

Coursework to be completed

7. A candidate proceeding by coursework shall complete units of study prescribed by the Faculty to a total value of 48 credit points from units of study approved from time to time by the Faculty.

Progress

8. (1) Each candidate shall report regularly to the Faculty on his or her progress towards completing the requirements for the degree.
(2) The Faculty shall consider the report of each candidate and may, if it considers that a candidate has not made satisfactory progress towards completing the requirements for the degree, terminate the candidature.
(3) The Faculty may accept a candidate's results in coursework examinations in place of reports from the candidate.

Lodgement of thesis

9. (1) Not earlier than the end of the minimum period of candidature, each candidate proceeding by research and thesis shall lodge with the Registrar three copies of a thesis embodying the results of an original investigation carried out by the candidate.
(2) The candidate shall state in the thesis, generally in a preface and specifically in notes, the sources from which the information was derived, the extent to which the candidate has made use of the work of others, and the portion of the thesis the candidate claims to be original.
(3) The thesis shall be accompanied by a certificate from the candidate's supervisor stating whether, in the supervisor's opinion, the form of presentation of the thesis is satisfactory.

Examination

10. The Faculty shall appoint at least two examiners for a thesis, one of whom shall be external to the University.

Result of candidature

11. The Faculty shall determine the result of the candidature after it has considered -
(a) the reports of the examiners of the thesis or the results of the examinations completed by a candidate proceeding by coursework, and
(b) a recommendation on the result of the candidature from the Head of the Department in which the candidate is proceeding.

Award of the degree

12. The degree of Master of Agriculture may be awarded in the following subject areas and the testamur for the degree shall specify the subject area:
(a) Agricultural Chemistry
(b) Agricultural Economics
(c) Agricultural Entomology
(d) Agricultural Genetics
(e) Agronomy
(f) Animal Science
(g) Biometry
(h) Cereal Chemistry
(i) Cereal Science
(j) Horticultural Science
(k) Microbiology
(1) Plant Breeding
(m) Plant Pathology
(n) Plant Protection
(o) Soil Conservation
(p) Soil Contamination
(q) Soil Science
(r) Turf Management.

APEC Master of Sustainable Development

1. A candidate for the APEC Master of Sustainable Development shall proceed by coursework.
2. A candidate for the degree of APEC Master of Sustainable Development shall proceed to the degree in the Faculty of Agriculture at the University of Sydney.

Admission to candidature

3. (1) The Faculty of Agriculture may admit to candidature for the degree of APEC Master of Sustainable Development a graduate of the University of Sydney who has completed a course acceptable to the Faculty.
(2) On the recommendation of the Faculty, the Academic Board may admit to candidature in accordance with Chapter 10 of the by-laws a person who has, in the opinion of the Faculty, qualifications equivalent to those of a graduate of the University of Sydney.

Periods of candidature

4. (1) The period of candidature for a full-time candidate for the degree of APEC Master of Sustainable Development shall be one year.
(2) The Faculty shall determine the minimum and maximum periods of candidature for part-time candidates on a pro-rata basis.
(3) The Faculty may deem time spent on coursework completed for another degree or diploma of the University of Sydney to be time spent or coursework completed for the degree of APEC Master of Sustainable Development in the Faculty if the candidate has ceased to be a candidate for the other degree or diploma, and the Faculty may reduce the minimum and maximum periods of candidature accordingly.

Appointment of a supervisor

5. The Faculty, on the recommendation of the Program Director, shall appoint a member of the full-time academic staff of the con-joint participating organisations as supervisor for the Research Project within the course.

Coursework to be completed

6. A candidate proceeding by coursework shall complete units of study prescribed by the Faculty to a total value of 48 credit points from units approved from time to time by the Faculty.

Progress

7. (1) Each candidate shall report regularly to the Faculty, through the Program Director, on his or her progress towards completing the requirements for the degree.
(2) The Faculty shall consider the report of each candidate and may, if it considers that a candidate has not made satisfactory progress toward completing the requirements for the degree, terminate the candidature.
(3) The Faculty may accept a candidate's results in coursework examinations in place of the reports from the candidate.

Result of candidature

8. The Faculty shall determine the result of candidature after it has considered -
(a) the results of examinations completed by a candidate
(b) a recommendation on the result from the Program Director.

Award of the degree

9. The testamur for the degree shall specify APEC Master of Sustainable Development.

Graduate Diplomas

1. Candidates for the graduate diplomas shall proceed by coursework.
2. (1) A candidate for the Graduate Diploma in Agricultural Science shall proceed in one of the following departments:
Department of Agricultural Chemistry and Soil Science
Department of Animal Science
Department of Crop Sciences
Department of Microbiology.
(2) A candidate for the Graduate Diploma in Agricultural Economics shall proceed in the Department of Agricultural Economics.

Admission to candidature

3. (1) The Faculty of Agriculture may admit to candidature for a graduate diploma in the Faculty a graduate of the University of Sydney who has completed units of study acceptable to the Faculty.
(2) On the recommendation of the Faculty, the Academic Board may admit to candidature in accordance with Chapter 10 of the by-laws a person who has, in the opinion of the Faculty, qualifications equivalent to those required of a graduate of the University of Sydney.
4. The Faculty may require a person admitted to candidature to serve a period of probation for not more than one year and to complete such work during the period as it may prescribe, and at the completion of the period, the Faculty shall review the candidature and the work completed, and may confirm or terminate the candidature. If the Faculty confirms the candidature, it shall be deemed to have commenced at the beginning of the period of probation.

Periods of candidature

5. (1) The period of candidature for a full-time candidate for a graduate diploma shall be one year.
(2) The Faculty shall determine the minimum and maximum periods of candidature for part-time candidates on a pro-rata basis.
(3) The Faculty may deem time spent or coursework completed for a degree or another diploma of the University of Sydney to be time spent or coursework completed for a diploma in the Faculty if the candidate has ceased to be a candidate for the degree or the other diploma, and the Faculty may reduce the period of candidature accordingly.

Progress

6. (1) Each candidate shall report regularly to the Faculty on his or her progress towards completing the requirements for the graduate diploma.
(2) The Faculty shall consider the report of each candidate and may, if it considers that a candidate has not made satisfactory progress towards completing the requirements for the graduate diploma, terminate the candidature.
(3) The Faculty may accept a candidate's results in coursework examinations in place of reports from the candidate.

Result of candidature

7. The Faculty shall determine the result of the candidature after it has considered -
(a) the results of the examinations completed by a candidate, and
(b) a recommendation on the result of the candidature from the Head of the Department in which the candidate is proceeding.

Award of the graduate diploma

8. The Graduate Diploma in Agricultural Science shall be awarded in the following subject areas and the testamur for the diploma shall specify the subject area:
(a) Agricultural Chemistry
(b) Agricultural Entomology
(c) Agricultural Genetics
(d) Agronomy
(e) Animal Science
(f) Biometry
(g) Horticultural Science
(h) Microbiology
(i) Plant Pathology
(j) Plant Protection
(k) Soil Science
(1) Turf Management.

Resolutions of the Faculty - Postgraduate Candidatures

Eligibility for admission

1. An applicant for admission to candidature for a research degree shall -
(a) be a Bachelor of Agricultural Economics or Bachelor of Science in Agriculture with First or Second Class Honours or equivalent of the University of Sydney; or
(b) for the Master of Agricultural Economics or Master of Science in Agriculture, be a Bachelor of Agricultural Economics or Bachelor of Science in Agriculture with a Credit or above in the Fourth Year in the field in which the candidate is proceeding; or
(c) have completed courses in another faculty or institution, diese courses being deemed by the Faculty to be equivalent.
2. Demonstrated research ability will be considered when determining eligibility; applicants proposing to proceed primarily by research and thesis should provide evidence such as publications in scientific journals.
3. A research topic, which is satisfactory in terms of research interests, resources and availability of supervision within the department, must be agreed upon between the applicant and the relevant department.
4. An applicant for admission to candidature for the degree of Master of Agriculture by coursework or the Graduate

Diploma in Agricultural Economics or the Graduate Diploma in Agricultural Science, both by coursework, shall have a bachelor's degree of the University of Sydney, or equivalent, and have demonstrated an adequate ability for the subject area to be studied.

5. Applicants may be required to provide evidence of adequate financial resources for personal support and compulsory fees during candidature. They may be required to demonstrate to the satisfaction of the Faculty a proficiency in the English language adequate to undertake the proposed candidature.

Availability

6. The number of students admitted may be limited and will be determined by -
   (a) availability of resources, including space, library, equipment and computing facilities, and
   (b) availability of adequate and appropriate supervision, including both the supervision of research candidatures and where appropriate the coordination of coursework programs.
7. In considering an application for admission to candidature the Faculty will take account of resource limitations and will select in preference applicants who are most meritorious in terms of sections 1-4 above.

Control of candidature

8. (i) Each candidate for the MAgrEc or MScAgr degree shall pursue his or her course of advanced study and research wholly under the control of the Faculty.
   (ii) Where a candidate is employed by an institution other than the University, the Faculty may require a statement by that employer acknowledging that the candidature will be under the control of the Faculty.

Part-time candidature by research

9. (i) The Faculty may permit candidates to enrol in part-time candidature provided they supply a satisfactorily detailed plan of their proposed program and attend at the University for such consultation with the supervisor and participate in such departmental and faculty activities as are required by the Head of the Department.
   (ii) The Faculty may permit part-time candidates for the MAgrEc or the MScAgr degree admitted under the provisions of Chapter 10 of the by-laws to complete the investigation elsewhere, after two years have been spent in this or equivalent candidature within the University.
   (iii) Candidates admitted to part-time candidature are expected to devote a minimum of 20 hours per week (or equivalent) to their candidature.
   (iv) Research assistants or associate lecturers in the University shall enrol part-time unless they can demonstrate to the satisfaction of the faculty that they have sufficient time to pursue full-time candidature.

Coursework to be completed

10. A candidate proceeding by coursework shall satisfactorily complete such coursework as the Faculty on the advice of the Head of the Department may prescribe. Coursework, including any prescribed research project, will be chosen from the tables of units of study attached to these resolutions. A result of PCON may not be counted towards the award of a degree or the graduate diploma.
    (a) For the MAgr degree, 48 credit points of coursework must be completed including 8 to 24 credit points of any prescribed research project.
    (b) For the GradDipAgrEc, 48 credit points of coursework must be completed including 8 or 16 credit points of any prescribed research project.
    (c) For the GradDipAgrSc, 48 credit points of coursework must be completed including 8 to 24 credit points of a research project.

Credit for previous studies

11. The Board of Postgraduate Studies (Board) may grant credit:
    (a) towards MAgr candidature for coursework completed in graduate diploma candidature in this Faculty;
    (b) for up to 12 credit points of unspecified coursework towards MAgr candidature for units of study completed in another faculty of this University or of other tertiary institutions;
    (c) for up to 8 credit points of unspecified coursework towards graduate diploma candidature for units of study completed in another faculty of this University or of other tertiary institutions; provided that:
        (i) no unit of study for which credit is granted has been a basis for the award of any other degree or diploma;
        (ii) the unit or units were passed at a level of competence or with such additional assessment or other requirements as may be determined by the Board in each case;
        (iii) the unit or units were completed within six years immediately preceding the commencement of candidature for the MAgr degree or the graduate diploma.

Form of a thesis

12. (1) A thesis may be bound for submission in either a temporary or a permanent form.
    (2) Temporary binding must be strong enough to withstand ordinary handling and postage. The preferred form of binding is the 'Perfect Binding' system; ring-back or spiral binding is not permitted.
    (3) The cover of a temporarily bound thesis must have a label with the candidate's name, name of the degree, the title of the thesis and the year of submission.
    (4) The requirements for permanent binding are set out in the Statutes and Regulations in the Academic Board's resolutions for binding of PhD theses.
    (5) Following examination, and emendation if necessary, at least one copy of a thesis (the Rare Book Library copy) must be bound in permanent form on archive paper.
    (6) If emendations are required, all copies of a thesis which are to remain available within the University must be emended.

Result of candidature

13. (1) The Board of Postgraduate Studies awards, or for the PhD degree recommends the award of, the degree or graduate diploma whenever -
        (a) the examiners have recommended without reservation that the degree be awarded and the Head of the Department concurs; or
        (b) all of the examiners have recommended that the degree be awarded or awarded subject to emendations to all copies of the thesis which are to remain available within the University and the Head of the Department concurs[1]; or
        (c) the Board of Postgraduate Studies unanimously accepts a recommendation from the Head of the Department to award or award subject to emendations despite reservations expressed by one or more of the examiners; or
        (d) the coursework results are satisfactory and the Head of the Department recommends the award of the degree or graduate diploma.
    (2) The Board of Postgraduate Studies may permit an unsuccessful candidate to prepare for re-examination if, in its opinion, the candidate's work is of sufficient merit to warrant this concession and the Head of the Department has so recommended.

Satisfactory progress

14. (1) A candidate proceeding by research and thesis shall lodge a progress report annually with the Registrar.
    (2) The Board of Postgraduate Studies may require a candidate proceeding by coursework to show good cause

why he or she should be allowed to re-enrol in a unit of study which has been twice failed or discontinued to count as failure.

Preliminary requirements

15. When an applicant is not qualified for admission to a Master's degree by research, the Faculty may require satisfactory completion of a preliminary examination before admission to candidature can be granted. In such a case a candidate may be enrolled in a Master's Preliminary program which shall consist of such coursework or other requirements as the Faculty may determine.

Delegation

16. In these resolutions -
(1) Faculty delegates its responsibility to the Board of Postgraduate Studies.
(2) The Board of Postgraduate Studies delegates the following responsibilities to the Dean who in turn delegates them to the Associate Dean (Postgraduate Studies): approval of-
(a) award of the degree of Doctor of Philosophy under conditions approved by the University's Committee for Graduate Studies
(b) award of the Master of Agriculture degree and the Graduate Diplomas in Agricultural Science and Agricultural Economics
(c) award of the Master of Science in Agriculture and Master of Agricultural Economics degrees when there is no apparent reason for debate at the Board
(d) appointment of examiners
(e) admission to candidature
(f) supervisory arrangements
(g) variation of candidature
(h) extension of candidature
(i) completion of candidature away from the University
(j) suspension of candidature
(k) approval of continuance following receipt of annual progress reports.

Completion of course

Except by permission of the Dean, no student shall be allowed to sit for any examination unless the requirements specified by the Faculty have been completed. The Dean may call upon any student who has been absent from more than 10 per cent of classes in any semester to show cause for such absence. Students who fail to show sufficient cause are excluded from admission to examinations. No excuse for absence from lectures, demonstration or practical work shall be received unless tendered in writing to the Departmental Office within one week after attendance is resumed.

Faculty Resolutions for APEC MSDevel

Eligibility for admission

1. An applicant for admission to candidature for the degree of APEC Master of Sustainable Development by coursework, shall have a bachelor's degree of the University of Sydney, or equivalent, and have demonstrated an adequate ability for the subject area to be studied.
2. Applicants may be required to provide evidence of adequate financial resources for personal support and compulsory fees during candidature. They may be required to demonstrate to the satisfaction of the Faculty a proficiency in the English language adequate to undertake the proposed candidature (IELTS 7.0 as a minimum, or equivalent qualifications).
3. The number of students admitted may be limited and will be determined by -
(a) availability of resources, including space, library, equipment and computing facilities, and
(b) availability of adequate and appropriate supervision, including both the supervision of project work and the coordination of coursework programs.
4. In considering an application for admission to candidature the Faculty will take account of resource limitations and will select in preference applicants who are most meritorious in terms of sections 1-2 above.

Control of candidature

5. Each candidate for the degree shall pursue his or her course under the control of the Faculty.

Part-time candidature

6. The Faculty may permit candidates to enrol in part-time candidature provide they supply a satisfactory detailed plan of their proposed program and attend at the University for such consultation with the supervisor and participate in University activities as required by the Program Director.

Coursework to be completed

7. A candidate proceeding by coursework shall satisfactorily complete such units of study as the Faculty on the advice of the Program Director may prescribe after consultation with the relevant coordinators in the con-joint institutions. Units of study, including a research project will be chosen from the tables of units attached to these resolutions.
For the APEC Master of Sustainable Development, units totalling 48 credit points must be completed including 20 credit points of the prescribed research project.

Credit for previous studies

8. The Board of Postgraduate Studies (Board) may grant credit for up to 12 credit points of unspecified coursework towards APEC Master of Sustainable Development candidature for units of study completed in another faculty of the University of Sydney or of other tertiary institutions; provided that
(a) no unit of study for which credit is granted has been a basis for the award of any other degree or diploma;
(b) the unit or units were passed at a level of competence or with such additional assessment or other requirements as may be determined by the Board in each case;
(c) the unit or units were completed within six years immediately preceding the commencement of candidature for the APEC Master of Sustainable Development.

Result of candidature

9. (1) The Board of Postgraduate Studies will award the degree when the coursework results are satisfactory and the Program Director recommends the award of the degree.
(2) The Board of Postgraduate Studies may permit an unsuccessful candidate to prepare for re-examination if, in its opinion, the candidate's work is of sufficient merit to warrant this concession and the Program Director has so recommended.

Satisfactory progress

10. The Board of Postgraduate Studies may require a candidate proceeding by coursework to show good cause why he or she should be allowed to re-enrol in a unit of study which has been twice failed or discontinued to count as failure.

Delegation

11. In these resolutions -
(1) Faculty delegates its responsibility to the Board of Postgraduate Studies.
(2) The Board of Postgraduate Studies delegates the following responsibilities to the Dean who in turn delegates them to the Associate Dean (Postgraduate Studies), approval of-
(a) award of the APEC Master of Sustainable Development
(b) admission to candidature
(c) supervisory arrangements

(d) variation of candidature
(e) completion of candidature away from the University
(f) extensions of candidature
(g) suspension of candidature.

Completion of course

Except by permission of the Dean, no students shall be allowed to sit for any examination unless the requirements specified by the Faculty have been completed. The Dean may call upon any student who has been absent from more than 10 per cent of classes in any semester to show cause for such absence. Students who fail to show sufficient cause are excluded from admission to examinations. No excuse for absence from lectures, demonstration or practical work shall be received unless tendered in writing to the Faculty Office within one week after attendance is resumed.

Enrolment regulations

Discontinuation of enrolment and readmission after discontinuation - postgraduate

All Faculties, Colleges, Boards of Studies and Graduate Schools - all candidates

1. A candidate will be presumed to have discontinued enrolment in a unit of study, degree or diploma from the date of application to the Faculty, College, Board of Studies or Graduate School concerned, unless evidence is produced (i) that the discontinuation occurred at an earlier date, and (ii) that there was good reason why the application could not be made at the earlier time.
2. A candidate who at any time discontinues enrolment from a degree or diploma shall not be entitled to re-enrol in that degree or diploma unless the candidate is readmitted to candidature for that degree or diploma.
3. Subject to subsections (i) and (ii) of section 1, candidates may not discontinue enrolment in a unit of study after the end of classes in that unit, unless the degree or diploma regulations permit otherwise.
4. The Dean, Pro-Dean or an Associate Dean of a Faculty, Director or Deputy Director of a College, a Chairperson of a Board of Studies or a Chairperson of a Graduate School may act on behalf of that Faculty, College, Board of Studies or Graduate School in the administration of these resolutions.

Candidates proceeding mainly by coursework

Withdrawal from full-year and March Semester units of study

5. A candidate for a degree or diploma who discontinues enrolment in a full-year or March Semester unit of study on or before 30 March in that year, shall be recorded as withdrawn from that unit.

Withdrawal from July Semester units of study

6. A candidate for a degree or diploma who discontinues enrolment in a July Semester unit of study on or before 30 August in that year, shall be recorded as withdrawn from that unit.

Discontinuation

1. A candidate for a degree or diploma who discontinues enrolment in a unit of study after the withdrawal period but before the end of classes in that unit, shall be recorded as 'Discontinued - Not to count as failure' in that unit, unless the degree or diploma resolutions permit otherwise.

Candidates proceeding mainly by thesis

Withdrawal

8. A candidate who discontinues enrolment in a unit of study or degree before the end of the fifth week of enrolment, shall be recorded as having withdrawn from that unit or degree.

Discontinuation

9. A candidate who discontinues enrolment in a unit of study or degree after the end of the fifth week of enrolment shall be recorded as 'Discontinued - Not to count as failure'.

Board of Postgraduate Studies

Pursuant to the resolutions of Senate the Faculty appoints the following Board of Postgraduate Studies:

Dean
Associate Dean (Postgraduate Studies)
Professors
Heads of Departments (or nominees).

Resolutions of the Faculty relating to the Bachelor degrees in the Faculty of Agriculture

These Resolutions must be read in conjunction with the University of Sydney Undergraduate Courses Rule and Senate Resolutions for Undergraduate Courses in the Faculty of Agriculture.

Section 1

1. To qualify for a degree, candidates must complete units of study making a total of 192 credit points and Professional Experience specified for individual degree courses. In a full-time program the normal load will be 48 credit points in each year for 4 years. The degree program must be completed within 10 calendar years of the first enrolment or readmission without credit. If a candidate is admitted or readmitted with credit, the Faculty will determine a reduced time limit for completion of the degree.
2. The following units of study shall be completed for degrees offered by the Faculty.

Restrictions on units

A candidate may choose elective units of study for which there is no prerequisite unit of study or for which the prerequisite/ corequisite has been satisfied, provided that the timetable permits attendance at all scheduled classes.

(a) A candidate for the degree of **Bachelor of Agricultural Economics** shall complete the following units of study:

Year One

AGEC 1001 Agricultural Economics 1A
AGEC 1002 Agricultural Economics IB
ECMT1 Econometrics (level 1000)
ECMT1 Econometrics (level 1000)
ECON 1002 Introductory Macroeconomics
ECON 1001 Introductory Microeconomics

and 12 credit points from Table 1 attached to these resolutions.

Year Two

AGEC 2005 Applied Commodity Modelling 2
AGEC 2001 Commodity Price Analysis 2
ECON 2002 Intermediate Macroeconomics
ECON 2001 Intermediate Microeconomics
AGEC 2003 Production Economics 2

and a minimum of 12 credit points from Tables 1 or 2 attached to these resolutions.

Year Three

AGEC 3001 Agribusiness Management 3
AGEC 3002 Agricultural and Resource Policy 3
AGEC 3004 Research Methods 3
ECON 3 two level 3000 Economics units (options) (8 credit points each)

and a minimum of 12 credit points from Table 2 attached to these resolutions.

Year Four

AGEC 4010 Contemporary Issues 4A
AGEC 4011 Contemporary Issues 4B
AGEC 4001 Research Project 4

and a minimum of 24 credit points from

AGEC 4009 Agricultural Finance and Risk Management 4
AGEC 4003 Applied international Trade 4
AGEC 4004 Applied Marketing 4
AGEC 4005 Natural Resource Economics 4
AGEC 4008 Quantitative Planning Methods 4

AGEC 4007 Special Topics in Agricultural and Resource Economics 4

Table 1: Units which may be taken in Year 1 and/or Year 2 of the BAgrEc degree

Unit of study		Credit points
No more than 24 credit points from this table may count towards the degree.		
ACCT 1001	Accounting IA	6
ACCT 1002	Accounting IB	6
CROP 1001	Agricultural SciencelA	6
CROP 1002	Agricultural S c i e n c e 1B	6
BIOL 1001	Concepts in Biology	6
BIOL 1002	Living systems	6
BIOL 1003	Human Biology	6
CLAW 1001	Commercial Transactions A	6
CLAW 1002	Commercial Transactions B	6
ACCT 1003	Financial Accounting Concepts*	6
GEOG1	Geography (level 1000 units)	6/6
GOVT1	Government (level 1000 units)	6/6
HORT 1001	Horticultural S c i e n c e 1A	6
HORT 1002	Horticultural S c i e n c e 1B	6
MATH 1011	Life Sciences Calculus	3
MATH 1012	Life Sciences Algebra	3
MATH 1013	Life Sciences Difference and Differential Equations	3
MATH 1015	Life Sciences Statistics	3
ACCT 1004	Management Accounting Concepts*	6
Modern Language (level 1000 units)		6
*Cannot be counted with Accounting IA & IB		

Table 2: Units which may be taken in Year 2 and/or Year 3 of the BAgrEc degree

Unit of study		Credit points
ACCT 2	Accounting (any level 2000 unit)	8
ACCT3	Accounting (any level 3000 unit)	8
AGRO 3001	Agronomy 3	8
ANSC 2003	Animal Science 2AE	4
ASNS 2601	Asian Studies 1 A	4
ASNS 2602	Asian Studies 1 B	4
ASNS 2603	Asian Studies 2A	4
ASNS 2604	Asian Studies 2B	4
ASNS 3601	Asian Studies 3A	4
ASNS 3602	Asian Studies 3B	4
CLAW2	Commercial Law (any level 2000 unit)	8
CLAW3	Commercial Law (any level 3000 unit)	8
CROP 2002	Crop and Pasture Agronomy 2	6
ECMT 2010	Regression Modelling	8
ECMT 2021	Analysis of Discrete Choice Data	8
ECMT3	Econometrics! (any level 3000 unit)	8
ECHS2	Economic History (any level 2000 unit)	8
ECON3	Economics (any level 3000 unit)	8
FINC2	Finance (any level 2000 unit)	8
FINC3	Finance (any level 3000 unit)	8
HORT 3002	Flower and Nursery Crops 3	4
GEOG2	Geography (any level 2000 unit)	8
GEOG3	Geography (any level 3000 unit)	12
GOVT2	Government (any level 2000 unit)	8
HORT 3001	Horticultural Science 3	8
MKTG2	Marketing (any level 2000 unit)	8
MKTG3	Marketing (any level 3000 unit)	8
Modern Language (level 2000/3000 units)		4/8
AGEC 4007	Special Topics in Agricultural and Resource Economics 4	8

Units of study from the BScAgr or BHortSc degrees, subject to the approval of the Head of Department of Agricultural Economics and the Head of the Department concerned.
t Subject to the approval of the Head of Department of Agricultural Economics.

(b) A candidate for the degree of **Bachelor of Horticultural Science** shall complete the following units of study:

Year One

ENTO 1001 Agricultural Entomology 1
BIOL 1201 Biology - Agricultural Concepts
BIOL 1202 Biology - Agricultural Systems
BIOM 1001 Biometry 1
AGEC 1001 Economic Environment of Australian Agriculture IA
AGEC 1002 Economic Environment of Australian Agriculture IB
HORT 1001 Horticultural S c i e n c e 1A
HORT 1002 Horticultural S c i e n c e 1B
CHEM 1001 and 1002 Fundamentals of Chemistry IA and IB; or
CHEM 1901 and 1902 Chemistry lAand IB (Advanced)

Year Two

AGCH2002 Agricultural Chemistry 2
GENE 2001 Agricultural Genetics 2
MICR 2101 Agricultural Microbiology 2
BIOM 2001 Biometry 2
CROP 2002 Crop Protection 2
CROP 2001 Crop Science 2
HORT 2001 Horticultural Science 2
SOIL 2003 Soil Science 2

Year Three

Units of study chosen from the following list, such units to have a minimum total value of 48 credit points (See Table 6 in (f) for credit point values):

AGEC 3001 Agribusiness Management 3
AGCH3016 Agricultural Biotechnology 3
CROP 3003 Agricultural Systems for Horticultural Science 3
AGRO 3001 Agronomy 3
AGEC 4004 Applied Marketing 4
AGCH3020 Chemistry and Biochemistry of Ecosystems A
AGCH3021 Chemistry and Biochemistry of Ecosystems B
BIOM 3002 Experimental Design 3
HORT 3002 Flower and Nursery Crops 3
AGCH3017 Food Chemistry and Biochemistry A
AGCH3018 Food Chemistry and Biochemistry B
HORT 3001 Horticultural Science 3
PPAT 3002 Plant Disease 3
HORT 3003 Postharvest Biology and Technology 3
AGEC 2003 Production Economics 2
AGCH3012 Rural Environmental Chemistry 3
SOIL 3003 Soil Science 3
BIOM 3003 Statistical Modelling 3

Year Four

HORT 4001 Horticultural Science 4A
HORT 4002 Horticultural Science 4B

(c) A candidate for the degree of **Bachelor of Land and Water Science** shall complete the following units of study:

Year One

BIOL 1001 Concepts in Biology
BIOM 1002 Environmetrics 1
ENVI1001 Global Geology
ENVI1002 Geomorphic Environments and Change
LWSC 1001 Land and Water Science 1A
LWSC 1002 Land and Water S c i e n c e 1B
CHEM 1001 and 1002 Fundamentals of Chemistry IA and IB or CHEM 1101 and CHEM 1102 Chemistry 1A and IB or CHEM 1901 and CHEM 1902 Chemistry 1A (Advanced), and lB(Advanced)

Year Two

AGCH2002 Agricultural Chemistry 2
BIOL 2101 Animals A Theory
BIOL 2102 Animals B Theory
BIOM 2002 Environmetrics 2
GEOG 2302 Fluvial Geomorphology
LWSC 2001 Land and Water Science 2
MICR 2013 Introductory Microbiology (Land and Water Science)
BIOL 2004 Plant Ecology and Diversity
SOIL 2003 Soil Science 2

Year Three
AGCH 3020 Chemistry and Biochemistry of Ecosystems A
ENVI 3002 Environmental Assessment
LWSC 3001 Hydrology and Catchment Management
AGCH 3012 Rural Environmental Chemistry 3
RSIS 3001 Rural Spatial Information Systems 3
SOIL 2002 Soil Resources and Conservation
AGRO3001 Vegetation and Water Resources 3
together with 12 credit points of electives chosen from units offered by the Faculties of Agriculture, Economics and Business, Engineering, Rural Management, and Science in relevant disciplines - ecology, land science, water science, biophysical modelling, socioeconomics and political systems, and approved by the course coordinator.
Year Four
ENVI 3003 Environmental Law and Planning
AGEC4027 Introductory Land and Water Economics 4
LWSC 4001 Planning and Communication Policy
LWSC 4002 Research Project 4
together with 12 credit points of electives chosen from units offered by the Faculties of Agriculture, Economics, Engineering, Rural Management, and Science in relevant discipline. - ecology, land science, water science, biophysical modelling, socioeconomics and political systems, and approved by the course coordinator.

(d) A candidate for the degree of **Bachelor of Resource Economics** shall complete the following units of study:
Year One
AGEC 1031 Resource Economics 1
BIOL 1001 and 1002 Concepts in Biology, and Living Systems; or
BIOL 1901 and 1902 Concepts in Biology (Advanced), and Living Systems (Advanced); or
LWSC lOOland 1002 Land & Water Science 1A and IB
CHEM 1001 and 1002 Fundamentals of Chemistry 1A and IB; or
CHEM 1101 and 1102 Chemistry 1A & B; or
CHEM 1901 and 1902 Chemistry lAand IB (Advanced)
MATH 1001 Differential Calculus and MATH 1002 Linear Algebra *and* MATH 1003 Integral Calculus and Modelling ana" MATH 1005 Statistics; or
(Advanced levels) MATH 1901/1902/1903/1905
ECON 1001 Introductory Microeconomics
Year Two
AGEC 2005 Applied Commodity Modelling 2
AGEC 2001 Commodity Price Analysis 2
ECON 2001 Intermediate Microeconomics
ECON 1002 Introductory Macroeconomics
GEOG 2001 Processes in Geomorphology
AGEC 2003 Production Economics 2
GEOG 2302 Fluvial Geomorphology; or
GEOG 2002 Fluvial and Coastal Geography
Year Three
AGEC 3002 Agricultural and Resource Policy 3
ECON 3 Economics (any level 3000 unit)
ECON 2002 Intermediate Macroeconomics
AGEC 3031 Resource Economics 3
together with 16 credit points of electives chosen from Table 3 below.
Year Four
ECON 3 level 3000 unit (option)
ENVI 4803 Environmental Law
AGEC 4041 Research Methods 4
AGEC 4031 Resource Economics Project 4
together with at least 12 credit points of units chosen from Table 5 below, and an additional unit(s) if necessary, chosen from Table 4, for a total of 48 credit points.

Table 3: Units from which Year Three BResEc students take electives

Units in the following discipline areas (Level 2000 unless otherwise specified):
- agricultural economics (Level 3000)
- agricultural chemistry
- animal science
- biology
- chemistry
- crop sciences
- economics (Level 2000 or 3000)
- environmental science
- geography (Level 2000 or 3000)
- geology
- land and water science
- mathematics
- marine science
- resource economics (Level 3000)
- soil science.

Table 4: Units from which Year Four BResEc students take electives

Units in the following discipline areas (Level 2000 or 3000 unless otherwise specified):
- agricultural economics (Level 3000 or 4000)
- agricultural chemistry
- animal science
- biology
- chemistry
- crop sciences
- economics
- environmental science
- geography
- geology
- land and water science
- mathematics
- marine science
- resource economics (Level 3000 or 4000)
- soil science

Table 5: Resource Economics units from which Year Four BResEc students take electives

AGEC 4032 Methods of Non-market Valuation 4
AGEC 4033 Minerals and Energy Economics 4
AGEC 4034 Renewable Resource Economics 4
AGEC 4035 Environmental Economics 4
AGEC 4036 Water Economics 4

(e) A candidate for the degree of **Bachelor of Science in Agriculture** shall complete the following units of study:
Year One
ENTO 1001 Agricultural Entomology 1
CROP 1001 Agricultural Science 1A
CROP 1002 Agricultural Science 1B
BIOL 1201 Biology -Agricultural Concepts
BIOL 1202 Biology - Agricultural Systems
BIOM 1001 Biometry 1
AGEC 1001 Economic Environment of Australian Agriculture 1A
AGEC 1002 Economic Environment of Australian Agriculture IB
CHEM 1001 and 1002 Fundamentals of Chemistry 1A and IB; or
CHEM 1901 and 1902 Chemistry lAand IB (Advanced)
Year Two
AGCH 2002 Agricultural Chemistry 2
GENE 2001 Agricultural Genetics 2
MICR2101 Agricultural Microbiology 2
ANSC 2001 Animal Science 2
BIOM 2001 Biometry 2
CROP 2002 Crop Protection 2
CROP 2001 Crop Science 2
SOIL 2003 Soil Science 2
Year Three
Units of study chosen from the following list, such units to have a minimum total value of 48 credit points (See Table 6 in (f) for credit point values):
AGEC 3001 Agribusiness Management 3
AGCH 3016 Agricultural Biotechnology 3
MICR3102 Agricultural Microbiology 3
CROP 3002 Agricultural Systems and Irrigation Science 3*

CROP 3003 Agricultural Systems for Horticultural Science 3*
AGRO 3001 Agronomy 3
ANSC 3005 Animal Biotechnology 3
ANSC 3001 Animal Nutrition 3
ANSC 3002 Animal Reproduction 3
ANSC 3003 Animal Structure and Function 3A
ANSC 3004 Animal Structure and Function 3B
AGEC4004 Applied Marketing 4
AGCH 3020 Chemistry and Biochemistry of Ecosystems A
AGCH3021 Chemistry and Biochemistry of Ecosystems B
AGEC 2001 Commodity Price Analysis 2
BIOM 3002 Experimental Design 3
HORT 3002 Flower and Nursery Crops 3
AGCH 3017 Food Chemistry and Biochemistry A
AGCH 3018 Food Chemistry and Biochemistry B
HORT 3001 Horticultural Science 3
PPAT 3002 Plant Disease 3
HORT 3003 Postharvest Biology and Technology 3
AGEC 2003 Production Economics 2
AGCH 3012 Rural Environmental Chemistry 3
RSIS 3001 Rural Spatial Information Systems 3
SOIL 3003 Soil Science 3
BIOM 3003 Statistical Modelling 3
* mutually exclusive
Year Four
One of the following subject areas:
AGEC 4022 and 4023 Agribusiness 4 (Agribusiness 4A and4B)
AGCH 4002 and 4003 Agricultural Chemistry 4 (Agricultural Chemistry 4A and 4B)
AGEC 4020 and 4021 Agricultural Economics 4 (Agricultural Economics 4A and 4B)
ENTO 4001 and 4002 Agricultural Entomology 4 (Agricultural Entomology 4A and 4B)
GENE 4001 and 4002 Agricultural Genetics 4 (Agricultural Genetics 4A and 4B)
MICR 4101 and 4102 Agricultural Microbiology 4 (Agricultural Microbiology 4A and 4B)
AGRO 4001 and 4002 Agronomy 4 (Agronomy 4A and 4B)
ANSC 4001 and 4002 Animal Production 4 (Animal Production 4A and 4B)
BIOM 4001 and 4002 Biometry 4 (Biometry 4A and 4B)
AGCH 4004 and 4005 Cereal Science 4 (Cereal Science 4A and4B)
FARM 4001 and 4002 Farming Systems 4 (Fanning Systems 4A and 4B)
HORT 4001 and 4002 Horticultural Science 4 (Horticultural Science 4A and 4B)
PPAT 4001 and 4002 Plant Pathology 4 (Plant Pathology 4A and4B)
AGEC 4024 and 4025 Resource Economics 4 (Resource Economics 4A and 4B)
SOIL 4002 and 4003 Soil Science 4 (Soil Science 4A and 4B)
AGFR 4001 and 4002 Special Program 4 (Special Program 4A and4B)

(f)Table 6: Credit points of the units of study listed in Resolution 2

The prerequisite/corequisite/assumed knowledge and special conditions are set out in the summary Table of Units of Study published in the Faculty Handbook. A student who enrols in accordance with these resolutions, in a unit or units of study prescribed for a degree other than that in which the student is enrolled, shall satisfy the prerequisite, corequisites and other requirements prescribed for such units of study.

Unit of study		Credit points
AGEC 4022	Agribusiness 4A	24
AGEC 4023	Agribusiness 4B	24
AGEC 3001	Agribusiness Management 3	8
AGEC 3002	Agricultural and Resource Policy 3	8
AGCH 3016	Agricultural Biotechnology 3	4
AGCH 2002	Agricultural Chemistry 2	8
AGCH 4002	Agricultural Chemistry 4A	24
AGCH 4003	Agricultural Chemistry 4B	24
AGEC 1001	Agricultural Economics 1A	6
AGEC 1002	Agricultural Economics IB	6
AGEC 4020	Agricultural Economics 4A	24
AGEC 4021	Agricultural Economics 4B	24
ENTO 1001	Agricultural Entomology 1	4
ENTO 4001	Agricultural Entomology 4A	24
ENTO 4002	Agricultural Entomology 4B	24
AGEC 4009	Agricultural Finance and Risk Management 4	4
GENE 2001	Agricultural Genetics 2	6
GENE 4001	Agricultural Genetics 4A	24
GENE 4002	Agricultural Genetics 4B	24
MICR 2101	Agricultural Microbiology 2	6
MICR 3102	Agricultural Microbiology 3	8
MICR 4101	Agricultural Microbiology 4A	24
MICR 4102	Agricultural Microbiology 4B	24
CROP 1001	Agricultural Science 1A	6
CROP 1002	Agricultural Science 1B	6
CROP 3002	Agricultural Systems and Irrigation Science 3	8
CROP 3003	Agricultural Systems for Horticult'l Science 3	4
AGRO 3001	Agronomy 3	8
AGRO 4001	Agronomy 4A	24
AGRO 4002	Agronomy 4B	24
ECMT 2021	Analysis of Discrete Choice Data	8
ANSC 3005	Animal Biotechnology 3	4
ANSC 3001	Animal Nutrition 3	8
ANSC 4001	Animal Production 4A	24
ANSC 4002	Animal Production 4B	24
ANSC 3002	Animal Reproduction 3	8
ANSC 2001	Animal Science 2	6
ANSC 2003	Animal Science 2AE	4
ANSC 3003	Animal Structure and Function 3A	8
ANSC 3004	Animal Structure and Function 3B	8
BIOL 2101	Animals A Theory	4
BIOL 2102	Animals B Theory	4
AGEC 2005	Applied Commodity Modelling 2	4
AGEC 4003	Applied International Trade 4	8
AGEC 4004	Applied Marketing 4	8
BIOL 1201	Biology 1 -Agricultural Concepts	4
BIOL 1202	Biology 1 -Agricultural Systems	5
BIOM 1001	Biometry 1	5
BIOM 2001	Biometry 2	6
BIOM 4001	Biometry 4A	24
BIOM 4002	Biometry 4B	24
AGCH 4004	Cereal Science 4A	24
AGCH 4005	Cereal Science 4B	24
CHEM1101	Chemistry 1A	6
CHEM 1901	Chemistry 1A (Advanced)	6
CHEM1102	Chemistry IB	6
CHEM 1902	Chemistry IB (Advanced)	6
AGCH 3020	Chemistry and Biochemistry of Ecosystems A	4
AGCH 3021	Chemistry and Biochemistry of Ecosystems B	4
AGEC 2001	Commodity Price Analysis 2	8
BIOL 1001	Concepts in Biology	6
BIOL 1901	Concepts in Biology (Advanced)	6
AGEC 4010	Contemporary Issues 4A	4
AGEC 4011	Contemporary Issues 4B	4
CROP 2002	Crop Protection 2	4
CROP 2001	Crop Science 2	6
MATH 1001	Differential Calculus	3
MATH 1901	Differential Calculus (Advanced)	3
ECMT1	Econometrics (level 1000)	6
ECMT1	Econometrics (level 1000)	6
AGEC 1001	Economic Environment of Australian Agriculture 1A	3
AGEC 1002	Economic Environment of Australian Agriculture IB	3
ECON3	Economics level 3000 (option)	8
ENVI3002	Environmental Assessment	4
AGEC 4035	Environmental Economics 4	4
ENVI 4803	Environmental Law	4
ENVI 3003	Environmental Law and Planning	4
BIOM 1002	Environmetrics 1	6
BIOM 2002	Environmetrics 2	4
BIOM 3002	Experimental Design 3	4

FARM 4001	Farming Systems 4A	24
FARM 4002	Farming Systems 4B	24
ACCT 1003	Financial Accounting Concepts	6
HORT 3002	Flower and Nursery Crops 3	4
GEOG 2002	Fluvial and Coastal Geography	8
GEOG 2302	Fluvial Geomorphology	6
AGCH3017	Food Chemistry and Biochemistry A	4
AGCH3018	Food Chemistry and Biochemistry B	4
CHEM 1001	Fundamentals of Chemistry 1A	6
CHEM 1002	Fundamentals of Chemistry IB	6
ENVI1002	Geomorphic Environments and Change	6
ENVI1001	Global Geology	6
HORT 2001	Horticultural Science 2	6
HORT 3001	Horticultural Science 3	8
HORT 4001	Horticultural Science 4A	24
HORT 4002	Horticultural Science 4B	24
BIOL 1003	Human Biology	6
LWSC 3001	Hydrology and Catchment Management	4
MATH 1003	Integral Calculus and Modelling	3
MATH 1903	Integral Calculus and Modelling (Advanced)	3
ECON 2002	Intermediate Macroeconomics	8
ECON 2001	Intermediate Microeconomics	8
AGEC4027	Introductory Land and Water Economics 4•	4
ECON 1002	Introductory Macroeconomics	6
MICR 2013	Introductory Microbiology (Land and Water Science)	4
ECON 1001	Introductory Microeconomics	6
LWSC 1001	Land and Water Science 1A	6
LWSC 1002	Land and Water S c i e n c e 1B	6
LWSC 2001	Land and Water Science 2	4
MATH 1002	Linear Algebra	3
MATH 1902	Linear Algebra (Advanced)	3
BIOL 1002	Living Systems	6
BIOL 1902	Living Systems (Advanced)	6
ACCT 1004	Management Accounting Concepts	6
AGEC4032	Methods of Non-market Valuation 4	4
AGEC4033	Minerals and Energy Economics 4	4
AGEC4005	Natural Resource Economics 4	8
LWSC 4001	Flanning and Communication Policy	4
PEAT 3002	Plant Disease 3	4
BIOL 2004	Plant Ecology and Diversity	8
PEAT 4001	Plant Pathology 4A	24
PPAT4002	Plant Pathology 4B	24
HORT 3003	Postharvest Biology and Technology 3	4
GEOG 2001	Processes in Geomorphology	8
AGEC 2003	Production Economics 2	8
AGEC4008	Quantitative Planning Methods 4	4
ECMT 2010	Regression Modelling	8
AGEC 4034	Renewable Resource Economics 4	4
AGEC 3004	Research Methods 3	4
AGEC 4041	Research Methods 4	4
LWSC 4002	Research Project 4	24
AGEC 4001	Research Project 4	16
AGEC 1031	Resource Economics 1	6
AGEC 3031	Resource Economics 3	8
AGEC 4024	Resource Economics 4A	24
AGEC 4025	Resource Economics 4B	24
AGEC 4031	Resource Economics Project 4	12
AGCH3012	Rural Environmental Chemistry 3	4
RSIS 3001	Rural Spatial Information Systems 3	4
SOIL 2002	Soil Resources and Conservation	8
SOIL 2003	Soil Science 2	6
SOIL 3003	Soil Science 3	8
SOIL 4002	Soil Science 4A	24
SOIL 4003	Soil Science 4B	24
AGRF4001	Special Program 4A	24
AGRF4002	Special Program 4B	24
AGEC 4007	Special Topics in Agricultural and Resource Economics 4	4
MATH 1005	Statistics	3
MATH 1905	Statistics (Advanced)	3
AGRO 3001	Vegetation and Water Resources 3	8
AGEC 4036	Water Economics 4	4

3. Variations permitted to the requirements specified in Resolution 2 include:

(i) Talented students

Some variation in units of study required for completion of the degree may be approved by the Dean for exceptionally talented students.

(ii) Summer School

Units of study completed at the University of Sydney Summer School which correspond to units of study in the Table of Undergraduate Units of Study (Resolution 2(f) Table 6) may be credited towards the course requirements

(iii) Cross-institutional enrolment

Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study at another institution and have that unit credited to his/her course requirements provided that either

(a) the unit of study content is material not taught in any corresponding unit of study in the University, or

(b) the student is unable for good reason to attend a corresponding unit of study at the University.

(iv) Additional units

A student may enrol in units of study additional to the requirements in an academic year, only with the permission of the Dean.

(v) Timetable clashes

A student must obtain written permission of the Head or Heads of Departments concerned, and the permission of the Dean, all of whom may impose conditions of attendance, to enrol in units of study which have timetable clashes.

(vi) Restriction on enrolment

A student must obtain the written permission of the Dean to enrol in level 3000 units of study unless he/she has successfully completed all required level 1000 units of study and has successfully completed or is concurrently enrolled in compulsory level 2000 units of study.

(vii) Credit Transfer

(a) Graduates or students in other faculties or of other institutions who are admitted to candidature for the degree of Bachelor may be granted credit for units of study required for the various degrees of the Faculty as specified in Resolution 2, as the Dean on behalf of the Faculty may determine, up to a maximum value of 96 credit points.

(b) The Dean may approve credit for a maximum of 36 unspecified credit points for units of study successfully completed elsewhere, but not comparable to units listed in Resolution 2, as part of the 96 credit point maximum credit transfer permitted.

Section 2

4. Assessment Policy

(i) Assessment methods for units of study offered by Departments in the Faculty will be included in unit details in the Faculty Handbook and made available to students enrolled in the units at the beginning of the semester.

(ii) Examinations

(a) Completion of unit of study

A student who has been absent from more than 10 per cent of classes in a unit may be deemed to have failed to complete the requirements specified by the Faculty for the unit and may be excluded by the Dean from admission to examinations in that unit.

(b) Further Testing

Heads of Departments may arrange for further testing of students in addition to scheduled assessments and examinations, in accordance with Academic Board policy.

Further tests for the BAgrEc, BHortSc, BLWSc, BResEc and BScAgr, degrees

1. Further tests may be awarded by the examining department where the candidate has been prevented by sufficient and duly certified illness or misadventure from completing the assessment for a unit of study. The full range of common result grades is available for these candidates.

2. Further tests may be awarded in a unit of study where the examiner requires further evidence to reach a final assessment of a candidate who has failed a unit of study and whose performance is borderline. The highest grade of award available is Pass.

3. Where possible and practicable, all further tests will be administered and results finalised no later than 2 weeks after the end of the examination period.

4. The Head of Department is responsible for the awarding, timetabling and conduct of further tests, which may take such form as the Head of Department directs. Students in a unit of study must be given notice of the proposed date for conducting further tests no later than the date of publication of the final University Examinations Timetable.

5. Individual students granted a further test should wherever possible be given at least three days' prior notice. A candidate who is absent from a further test without sufficient reason will be deemed to have failed the test.

6. In respect to the notification of students referred to in sections 4 and 5, students will be deemed to have been notified by the Department as a result of the posting of information by the due date on one or more noticeboards as advised by the Department concerned.

7. It is the responsibility of the student to provide written evidence of illness or misadventure to the appropriate Head of Department as soon as possible and practicable and in any case before the close of the relevant examination period. Where such evidence is not presented in time for the student to be offered a further test on the advertised date, it will only be considered by the Head of Department where there is sufficient reason why it has not been presented by that date.

(iii) Pass (Concessional)

(a) The award of a Pass (concessional)(marks 46-49) in a unit of study entitles the student to receive credit points for that unit of study and to continue in the degree course unhindered.

(b) The concessional pass is not available for candidates in the BAgrEc and BResEc degrees.

(c) For candidates in the BScAgr, BHortSc and BLWSc degrees:

(1) Concessional passes are available only in level 1000 units of study (maximum of 12 credit points) and level 2000 units of study (maximum of 14 credit points)

(2) When Concessional pass results total more than 12 (level 1000) or 14 (level 2000) credit points, the student shall decide which unit of study or units of study to count for the degree.

Honours

5. (i) First Class or Second Class Honours, Division One or Division Two may be awarded at graduation.

(ii) First Class Honours candidates whose work is of sufficient merit, in the opinion of the Faculty Committee to Award Prizes, Honours and the University Medal, shall receive a bronze medal.

(iii) Award of honours at graduation

1. Honours are awarded in Agriculture and not in an individual subject.

2. Details of the Fourth Year work and determination of marks for Fourth Year are the responsibility of heads of departments and sections concerned.

3. All candidates who have completed an independent research project as part of the final year degree program are formally eligible to be considered for honours. Except with the special permission of the Faculty, honours shall not be awarded to any candidate for the degree of Bachelor of Science in Agriculture, Bachelor of Horticultural Science, Bachelor of Land and Water Science, Bachelor of Agricultural Economics or Bachelor of Resource Economics unless the candidate has completed the course in the minimum time. Notwithstanding the previous condition, candidates who complete the first three years of the course in four years, and who by virtue of their weighted average marks would otherwise qualify for the award of honours, will be so considered. Such candidates may however be disadvantaged in terms of honours grading and rankinE.

4. (1) For the BAgrEc and BResEc degrees. For the assessment of an aggregate mark for the award of honours at the end of the Fourth Year -

(a) Each of the units of study at level 2 and level 3 provided for in the resolutions shall be weighted according to credit point value and a weighted average mark (WAM) obtained. Each of the units of study at level 4 provided for in the resolutions shall be weighted according to credit point value and a weighted average mark (WAM) obtained.

(b) The overall aggregate honours mark shall be the average of the level 2/3 WAM and the level 4 WAM.

4. (2) For the BScAgr, BHortSc and BLWSc degrees. For the determination of the overall honours mark for the award of honours at the end of the Fourth Year -

(a) Each of the units of study provided for in the resolutions in Second and Third Years shall be weighted according to credit point value and a weighted average mark (WAM) obtained.

(b) The overall honours mark shall be the average of the Second and Third Year WAM and the Fourth Year mark.

5. In computing the aggregate marks of students, the mark achieved on the occasion of the first attempt at a unit of study shall be the mark used.

6. (1) For the BAgrEc and BResEc degrees. For the award of a particular level of honours a candidate, except in special circumstances, must obtain the relevant minimum aggregate honours mark and the minimum WAM in Second and Third Year units of study set out in the following table:

Level of honours (under review)	Minimum overall honours mark	Minimum WAM in 2nd and 3rd Years
First Class	75	70
Second Class, Division 1	70	65
Second Class, Division 2	65	62

In the event of a recommendation for the award of honours that departs from these standards, it shall be incumbent upon the head of department and section concerned to make out a substantial case for such a departure. Admissible grounds for departure would include medical disability or misadventure early in the course, and the existence of consistently lower standards of grading in units of study undertaken outside the Faculty of Agriculture.

6. (2) For the BScAgr, BHortSc and BLWSc degrees. For the award of a particular level of honours, a candidate, except in special circumstances, must obtain the relevant minimum marks as set out in the following table:

Level of honours (under review)	Minimum overall honours mark	Minimum Fourth Year WAM	Minimum WAM in 2nd and 3rd Years
First Class	75	75	70
Second Class, Division 1	66	70	63
Second Class, Division 2	61	65	58

In the event of a recommendation for honours that departs from these standards, it shall be incumbent upon the head of department and section concerned to make a substantial case for such a departure.

7. The Board of Examiners shall be responsible for the award of the university medal and the award of honours. Achievement of the minimum standards referred to elsewhere in these resolutions is not in itself sufficient justification for these awards.

8. (1) (under review)For the BAgrEc and BResEc degree, a university medal may be awarded, on the recommendation of the Head of the Department of Agricultural Economics, to a student who has a Level 4 WAM of at least 85, an aggregate Honours mark of at least 80 and a Second/Third Year WAM of at least 75.
8. (2) (under review) For the BScAgr, BHortSc and BLWSc degrees, a university medal may be awarded, on the recommendation of the Head of Department concerned, to a student who has a Level 4 WAM of at least 85, an overall honours mark of at least 80 and a Second/Third Year WAM of at least 75.

6. Suspension, withdrawal and discontinuation, re-enrolment, and satisfactory progress

(i) Suspension of candidature

A student, who has enrolled for the degree and who wishes to suspend candidature for more than two semesters, must seek approval of the Dean, who, where appropriate, may consult departments concerned and having considered advice, may determine any conditions for re-enrolment. A student, who has not obtained written permission to suspend candidature for more than two semesters, will be required to apply for re-admission in accordance with procedures determined by the Dean.

(ii) Withdrawal and Discontinuation of enrolment

(a) Withdrawal from full-year and March Semester units of study

A candidate for a degree of Bachelor who discontinues enrolment in a full-year or March Semester unit of study on or before 31 March in that year shall be recorded as having withdrawn from that unit.

(b) Withdrawal from July Semester units of study

A candidate for a degree of Bachelor who discontinues enrolment in a July Semester unit of study on or before 31 August in that year shall be recorded as having withdrawn from that unit.

(c) Discontinuation

A student who wishes to discontinue enrolment in a course or a unit of study must apply to the Dean or the Dean's nominee.

(1) Discontinued — Not to count as failure

A candidate for the degree of bachelor who discontinues enrolment in a unit of study after the relevant withdrawal period and

(a) on or before the Friday of the first week of July Semester for a full-year unit of study, or

(b) up to the last day of the seventh week of teaching in a one semester unit of study, shall be recorded as Discontinued - Not to count as failure (DNF).

(2) Discontinued—Fail

A candidate for the degree of bachelor who discontinues enrolment in a unit of study

(a) after the Friday of the first week of July Semester for a full-year unit of study, or

(b) after the last day of the seventh week of teaching in a one semester unit of study, shall be recorded as Discontinued - Fail (DF).

(3) The Dean, Pro-Dean or an Associate Dean of the Faculty may determine that a discontinuation of enrolment should be recorded as 'Discontinued - Not to count as failure' on the grounds of serious ill-health or misadventure.

(iii) Re-enrolment after an absence

A student who wishes to re-enrol after an absence must contact the Dean in writing no less than six weeks prior to the commencement of the semester to allow administrative processes to be carried out.

(iv) Satisfactory Progress - Exclusion and Re-admission

There are certain circumstances in which a student may be asked to show good cause why he/she should be permitted to repeat any previously attempted study, if, in the opinion of the Faculty Exclusions and Re-admission Committee, he/she has not made satisfactory progress towards fulfilling the requirements of the degree or the unit.

Satisfactory progress cannot be defined in all cases in advance but a student who has -

(a) twice failed (F), or discontinued enrolment to count as a failure (DF), any unit of study as defined in Resolution 2 relating to the Bachelor degrees of the Faculty or

(b) at the annual examinations in the second or any subsequent year of enrolment, failed more than sixty per cent of the credit points for which enrolled in any four successive semesters,

shall be deemed not to have made satisfactory progress.

In cases where the Faculty permits the re-enrolment of a student whose progress has been deemed unsatisfactory, the Faculty may require the completion of specified units of study in a specified time, and if the student does not comply with these conditions the student may again be called upon to show good cause why he/she should be allowed to re-enrol in the Faculty of Agriculture.

It is not possible to define in advance all the reasons that constitute 'good cause' but serious ill health, or misadventure properly attested, will be considered. In addition your general record, for example in other courses, would be taken into account. In particular if you were transferring from another faculty your record in your previous faculty would be considered. Not usually acceptable as good cause are such matters as demands of employers, pressure of employment, time devoted to non-university activities and so on, except as they may be relevant to any serious ill health or misadventure.

7. Professional Experience and Faculty Excursions

Students are required to undertake professional experience in University vacations as an integral and essential part of their overall training in the degrees of Bachelor of Agricultural Economics, Bachelor of Science in Agriculture, Bachelor of Horticultural Science, and Bachelor of Resource Economics.

The aims of professional experience are to:

1. Familiarise students with agricultural, horticultural or natural resource industries.
2. Provide the opportunity to experience agricultural and horticultural production across a range of environments and managerial systems;
3. Provide experience with business organisations involved in finance, marketing, research and development and other aspects of the rural industries;
4. Train students to collect, collate, analyse and report.

BAgrEc and BScAgr

1. Candidates must complete 18 weeks of professional experience. Each component of the experience must be approved on behalf of the Dean before credit is granted. A minimum of 6 weeks professional experience must be completed as on-farm experience, with a maximum visit of 6 weeks with any single organisation (farm or non-farm). A maximum of 4 weeks may be credited on property which is owned by the candidate's parents or by the University, however, this time is in addition to and exclusive of the minimum 6 week on-farm requirement.
2. It is a requirement that on-farm experience includes:

(a) experience in 2 different regions (and not adjacent shires)

(b) experience in 2 rural enterprises

A significant proportion of this 6 week on-farm component should be completed before non-farm professional experience is undertaken. The farms concerned must be commercial farms not hobby farms. Commercial farms are defined as those having a gross income of at least $25 000.

3. A separate report must be submitted following each visit to a farm or organisation. Credit is subject to a satisfactory and timely report. Late reports normally are not credited. Time penalties are applied to resubmitted and incomplete reports. A senior report must be completed on a commercial farm. (A maximum of 3 'General Reports' can be credited.)

4.* Students are required to attend *one of the* North Western, Central or South Western NSW excursions arranged by the Faculty and may attend each one. A maximum of 4 weeks professional experience may be gained by attending Faculty excursions provided a satisfactory report is submitted for each excursion. The Dean may approve special activities which will be credited within the 4 week maximum. Excursion time is exclusive of your 6 week on-farm requirement.
5. Final year students wishing to graduate must complete all practical work requirements by 14 January of the year of graduation. **Reports from graduands submitted after 14 January will not be marked until the July semester.**

BHortSc
1. Candidates must complete 18 weeks of professional experience. Each component of the experience must be approved on behalf of the Dean before credit is granted. A minimum of 6 weeks professional experience must be completed in horticultural production industries (on-farm), with a maximum visit of 6 weeks with any single organisation (farm or non-farm). A maximum of 4 weeks may be credited on property which is owned by the candidate's parents or by the University, however, this time is in addition to and exclusive of the minimum 6 week on-farm requirement.
2. It is a requirement that the experience in horticultural production industries include a minimum of 2 weeks in at least 2 industries in at least 2 climatic regions as defined below. A significant proportion of this 6 week on-farm component should be completed before non-farm professional experience is undertaken. The farms concerned must be commercial farms not hobby farms. Commercial farms are defined as those having a gross income of at least $25 000.
The horticultural industries are classified into 4 groups for professional experience:
- Fruit and Nut
- Vegetables
- Ornamentals (including nursery stock, cut flower and turf production)
- Amenity (including parks, gardens and streetscape establishment and maintenance and landscape horticulture).

The Australian regions are listed in the back of the Professional Experience Book except that for BHortSc students the coastal region (Zone 1) is subdivided along the southern boundary of Kempsey Shire.
3. A separate report must be submitted following each visit to a farm or organisation. Credit is subject to a satisfactory and timely report. Late reports normally are not credited. Time penalties are applied to resubmitted and incomplete reports. A senior report must be completed on a commercial farm. (A maximum of 3 'General Reports' can be credited.)
4*. Students are required to attend the Faculty Horticulture Excursion, or, if this is not available during the student's Second or Third year, the Faculty North Western NSW Excursion. Horticultural Science students may also attend the North Western, Central or South Western NSW excursions arranged by the Faculty. A maximum of 4 weeks professional experience may be gained by attending excursions provided a satisfactory report is submitted for each excursion. The Dean may approve special activities which will be credited within the 4 week maximum. Excursion time is exclusive of the 6 week horticultural production industries requirement.
5. Final year students wishing to graduate must complete all practical work requirements by 14 January of the year of graduation. **Reports from graduands submitted after 14 January will not be marked until the July semester.**

BResEc
1. Candidates must complete 18 weeks of professional experience by completing several placements. Each placement with a single organisation will normally be for at least two weeks and can count for no more than six weeks. Each placement must be approved by the Dean before credit is granted.
2. Students must complete at least 2 "field-work" experience placements. These placements must be with firms or organisations involved in natural resources and each must be in a different industry (e.g. farming, forestry, fishing, mining, energy, water harvesting or use, national parks). "Field-work" here means working with the resource system in situ, not managing or working in relation to it remotely.
3. At least one field-work placement will normally be completed before the commencement of the second academic year. At least two field-work placements and a minimum of eight weeks of professional experience will normally be completed before commencement of the third academic year.
4. Students must complete a minimum of four weeks on one or more placements in professional activities gaining experience of management or economic analysis of natural resources relevant to BResEc graduates.
5. Sufficient placements to accrue 18 weeks professional experience should be completed before the commencement of the final semester of the student's course of study.
6. A separate Professional Experience Report must be submitted for each placement. The placement will count towards satisfying these requirements only if the report is satisfactory and submitted by the due date as set by Faculty. Reports must follow the formats (one for field-based experience and another for professional activities experience) specified in the BResEc Professional Experience Report Book (or equivalent documentation).
7. Students are required to participate in at least one Faculty-approved excursion of at least 5 days total length. Students will be granted credit towards the 18 weeks professional experience requirement if they submit a satisfactory excursion report. Up to 2 weeks credit may be granted for satisfactory completion of excursions.
8. A maximum of 2 weeks may be credited for a natural resources enterprise which is owned or operated by the candidate's parents or by the University. However, this time is in addition to and exclusive of the minimum three placements (8 weeks) specified in clauses (2) and (4).
9. Final year students wishing to graduate must complete all professional experience requirements and submit reports by 14 January of the year of proposed graduation. **Reports from graduands submitted after 14 January will not be marked until the July semester.**

Faculty Excursions
Faculty excursions can contribute up to 4 weeks of professional experience. All students must attend at least one Faculty NSW excursion. Three one week excursions are held each year in NSW. From time to time there are interstate and overseas excursions of several weeks.
***The excursions are held each year as follows:**
(a) First Year - at Easter, from Easter Monday, - to the Macquarie Valley in the Central West
(b) South West Excursion - in the 2nd semester mid-semester break (the end of September, just before the October long weekend).
(c) North West Excursion- during Orientation Week.
(d) Horticulture excursion - a requirement for Horticulture students in 2nd or 3rd year, others may join if space allows.
(e) Interstate and overseas excursions- sometimes offered in the winter break between semesters to the Northern Territory. Excursions to Indonesia or New Zealand may be offered.
The Faculty arranges all local transport, food and accommodation. Students are required to meet reasonable living costs.

General University information

See also the Glossary for administrative information relating to particular terms.

Accommodation Service

The Accommodation Service assists students to find off-campus accommodation by maintaining an extensive database of suitable accommodation in various areas but primarily close to University or within easy access via public transport.
Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 3312
Fax: (02) 9351 8262
TTY: (02) 9351 3412
Email: accomm@stuserv.usyd.edu.au
Web: www.usyd.edu.au/su/accom

Admissions Office

The Admissions Office is responsible for overseeing the distribution of offers of admission to undergraduate students through the Universities Admissions Centre (UAC) and can advise prospective local undergraduate students on admission requirements. Postgraduate students should contact the appropriate faculty. Applicants without Australian citizenship or permanent residency should contact the International Office.
Student Centre
Ground Floor, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 4117 or (02) 9351 4118
Fax: (02) 9351 4869
Email: admissions@records.usyd.edu.au

Applying for a course

Prospective (intending) undergraduate students must lodge an application form with the Universities Admissions Centre (UAC) by the last working day of September of the year before enrolment for all courses except the graduate dental and medical programs, which require direct application to the faculties of Dentistry and Medicine. Note that some faculties may have additional application procedures.

Assessment

For matters regarding assessment, refer to the relevant Department or School.

Casual Employment Service

The Casual Employment Service helps students find casual and part-time work during their studies and in University vacations.
Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone: (02) 9552 2589
Fax: (02) 9552 4713
Email: ces@stuserv.usyd.edu.au
Web: www.usyd.edu.au/su/cas_emp

Centre for English Teaching

The Centre for English Teaching provides a variety of full-time English language courses for adult students at all levels of proficiency, including General English from Beginner to Advanced, IELTS preparation, and a range of specific programs in English for Academic Purposes designed to bring international students up to the required English language entry levels for degree programs at the University.
Level 2, Building F, 88 Mallett St
Camperdown NSW 2006
Phone: (02) 9351 0706
Fax: (02) 9351 0701
Email: info@cet.usyd.edu.au
Web: www.usyd.edu.au/cet

Child Care

Contact the Child Care Coordinator for information about Children's Services for students and staff of the University who are parents.
Child Care Coordinator
Level 7, Education Building, A35
Phone: (02) 9351 5667
Fax: (02) 9351 7055
TTY: (02) 9351 3412
Email: childc@stuserv.usyd.edu.au
Web: www.usyd.edu.au/su/childcare

Co-op Bookshop

Sells textbooks, reference books, general books and software. Special order services available.The Co-op Bookshop is located at:
Sydney University Sports and Aquatic Centre, G09
Cnr Codrington St and Darlington Rd
Phone: (02) 9351 3705 or (02) 9351 2807
Fax: (02) 9660 5256
Email: sydu@mail.coop-bookshop.com.au
Web: www.coop-bookshop.com.au

Counselling Service

The Counselling Service aims to help students fulfil their academic, individual and social goals through professional counselling which is free and confidential.
Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 2228
Fax: (02) 9351 7055
TTY: (02) 9351 3412
Email: counsell@mail.usyd.edu.au
Web: www.usyd.edu.au/su/counsel

Disability Services

Disability Services is the principal point of contact and advice on assistance available for students with disabilities. The Service works closely with academic and administrative staff to ensure that students receive reasonable accommodations in all areas of their study. Assistance available includes the provision of notetaking, interpreters, and advocacy with academic staff to negotiate assessment and course requirement modifications where appropriate.
Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 4554
Fax: (02) 9351 7055
Email: disserv@stuserv.usyd.edu.au
Web: www.usyd.edu.au/su/disability

Enrolment and pre-enrolment

Students entering first year
Details of the enrolment procedures will be sent to new undergraduate students with their UAC Offer of Enrolment. Enrolment takes place at a specific time and date, depending on your surname and the faculty in which you are enrolling, but is usually within the last week of January. You must attend the University in person or else nominate, in writing, somebody to act on your behalf. On your enrolment day, you pay the compulsory fees for joining the Student Union, the Students' Representative Council and the student sporting

bodies. Fees for certain courses are also payable at enrolment as is upfront HECS if you decide to pay with this option. You also choose your first-year units of study, so it's important to consult the faculty handbook before enrolling. Faculty handbooks can be purchased at the Student Centre, or found on the web at www.usyd.edu.au/studentcentre/enrolments.

Re-enrolling students

For re-enrolling students, enrolment is accomplished via pre-enrolment which is compulsory. A pre-enrolment package is sent to all enrolled students in early October which contains instructions on pre-enrolment procedures.

Examinations

The Examinations and Exclusions Office is usually responsible for examination seat numbers, examination timetabling and examination arrangements. This information is available to students via the web (MyUni).

Examinations and Exclusions Office
Student Centre
Level 1, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 4005 or (02) 9351 5054
Fax: (02) 9351 7330
Email: exams.office@exams.usyd.edu.au

Note that some faculties, such as the Sydney Conservatorium of Music, make all examination arrangements for the units of study that they offer.

Fees

The Fees Office provides advice to students on how to pay fees, where to pay, and if payments have been received.

Margaret Telfer Building, K07
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 5222
Fax: (02) 9351 4202

Financial Assistance Office

The University has a number of loan funds and bursaries to assist students who experience financial difficulties. Assistance is not intended to provide the principal means of support but to help in emergencies and to supplement other income.

Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 2416
Fax: (02) 9351 7055
TTY: (02) 9351 3412
Email: fao@stuserv.usyd.edu.au
Web: www.usyd.edu.au/su/fin_assist

Freedom of Information

The University of Sydney falls within the jurisdiction of the NSW Freedom of Information Act, 1989. The Act requires information concerning documents held by the Umversity to be made available to the public, to enable a member of the public to obtain access to documents held by the University and to enable a member of the public to ensure that records held by the University concerning his or her personal affairs are not incomplete, incorrect or out of date. By definition, a 'member of the public' includes staff or students of the University.

- Application may be made for access to access University documents, however the Act provides some exemptions to particular documents. The Act contains review and appeal mechanisms which are required to be explained to applicants where applicable. The University is required to report to the public on its FOI activities on a regular basis. The two reports provided are the Statement of Affairs and the Summary of Affairs. The Statement of Affairs contains information about the Umversity, its structure and function and the kinds of documents held. The Summary of Affairs identifies each of the University's policy documents and provides a contact list for those wishing to access these documents. Further information, and copies of the current reports may be found at www.usyd.edu.au/arms/foi/.
- It is a requirement of the Act that applications be processed and a determination be made generally within 21 days. Determinations are made by the University's Registrar.

Graduations Office

The Graduations Office is responsible for organising graduation ceremonies and informing students of their graduation arrangements.

Ground Floor, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 3199, (02) 9351 4009
Protocol: (02) 9351 4612
Fax: (02) 9351 5072
Email: d.obrien@exams.usyd.edu.au

(Grievances) appeals

Many decisions about academic and non-academic matters are made each year and you may consider that a particular decision affecting your candidature for a degree or other activities at the University may not have taken into account all the relevant matters.

- In some cases the by-laws or resolutions of the Senate (see University Calendar) specifically provide for a right of appeal against particular decisions; for example, there is provision for appeal against academic decisions, disciplinary decisions and exclusion after failure.
- A document outlining the current procedures for appeals against academic decisions is available at the Student Centre, at the SRC, and on the University's web site at www.usyd.edu.au/su/planning/policy/
- If you wish to seek assistance or advice regarding an appeal, contact:

Students' Representative Council
Level 1, Wentworth Building, G01
The University of Sydney
NSW 2006 Australia
Phone: (02) 9660 5222

HECS and fees

The HECS and Fees Office in the Student Centre can provide advice on your HECS or fee liability at any time.

Student Centre
Ground Floor, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 2086, (02) 9351 5659, (02) 9351 5062
Fax: (02) 9351 5081

International Student Centre

The International Student Centre consists of the International Office (IO), the International Student Services Unit (ISSU) and the Study Abroad and Exchange Office. The International Office provides assistance with application, admission and enrolment procedures and administers scholarships for international students. The ISSU provides a wide range of international student support services including arranging arrival accommodation and offering advice and professional counselling. The Study Abroad and Exchange Unit assists both domestic and international students who wish to enrol for Study Abroad or Exchange programs.

International Student Centre
Services Building, G12
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 4079
Fax: (02) 9351 4013
Email: info@io.usyd.edu.au
Web: www.usyd.edu.au/intemational/index/.html

International Student Services Unit
Phone: (02) 9351 4749
Fax: (02) 9351 6818
Email: info@issu.usyd.edu.au
Web: www.usyd.edu.au/su/issu/
Study Abroad and Exchange Unit
Study Abroad
Phone: (02) 9351 5841
Fax: (02) 9351 2795
Email: studyabroad@io.usyd.edu.au
Web: www.usyd.edu.au/su/io/studyabroad/
Exchange
Phone: (02) 9351 5843
Fax: (02) 9351 2795
Email: exchange@io.usyd.edu.au
Web: www.usyd.edu.au/su/exchange/

Intranet

USYDnet is the University of Sydney's intranet. It provides easy access to staff and student directories, maps, software and useful resources for both staff and students. As well as delivering information, the intranet provides interactive services such as the Calendar of Events, where staff and students can enter events and publish them university-wide.

MyUni is the personalised section of USYDnet. All staff and students are provided with access to MyUni through a login name and password. This enables them to customise the information they see and also receive delivery of personal information such as exam results and seat numbers. MyUni is a portal from which students and staff can complete tasks that were previously only possible offline. Web enrolment variation is one of the first of many facilities that are helping to move the every day tasks of all members of the university online.

Learning Centre

The Learning Centre assists students to develop the generic skills which are necessary for learning and communicating knowledge and ideas at university. The Centre is committed to helping students to achieve their academic potential throughout their undergraduate and postgraduate studies.
Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 3853
Fax: (02) 9351 4865
Email: lc@stuserv.usyd.edu.au
Web: www.usyd.edu.au/su/lc

Library

Students are welcome to use any of the 23 libraries in the University. The student card is also the library borrower's card. Further details of the libraries, including services provided, locations and opening hours are available on the Library's homepage www.library.usyd.edu.au as well as in the printed *Library Guide*, available at any library. Consult the Library staff for assistance.

The libraries listed below are located on the Camperdown/Darlington campus unless otherwise specified.

Alexander Mackie Curriculum Resources Library
Old Teachers College, A22
Phone: (02) 9351 6254
Fax: (02) 9351 7766
Email: curriculum@library.usyd.edu.au
Architecture Library
Wilkinson Building, G04
Phone: (02) 9351 2775
Fax: (02) 9351 4782
Email: architecture@library.usyd.edu.au
Badham Library
Badham Building, A16
Phone: (02) 9351 2728
Fax: (02) 9351 3852
Email: badham@library.usyd.edu.au
Biochemistry Library
Biochemistry Building, G08
Phone: (02) 9351 2231
Fax: (02) 93517699
Email: biochemistry@library.usyd.edu.au
Burkitt-Ford Library
Sir Edward Ford Building, A27
Phone: (02) 9351 4364
Fax: (02) 9351 7125
Email: burkittford@library.usyd.edu.au
Camden Library
University Farms, Camden, C15
Phone: (02) 9351 1627
Fax: (02) 4655 6719
Email: camden@library.usyd.edu.au
Chemistry Library
Chemistry Building, Fl 1
Phone: (02) 9351 3009
Fax: (02) 9351 3329
Email: chemistry@hbrary.usyd.edu.au
Dentistry Library
United Dental Hospital, 2 Chalmers St, Surry Hills, C12
Phone: (02) 9351 8331
Fax: (02) 9212 5149
Email: dentistry@library.usyd.edu.au
Engineering Library
P N Russell Building, J02
Phone: (02) 9351 2138
Fax: (02) 9351 7466
Email: engineering@library.usyd.edu.au
Fisher Library
Eastern Ave, F03
Phone: (02) 9351 2993
Fax: (02) 9351 2890
Email: fishinf@library.usyd.edu.au
Geosciences Library
Madsen Building, F09
Phone: (02) 9351 6456
Fax: (02) 9351 6459
Email: geosciences@library.usyd.edu.au
Health Sciences Library
East St, Lidcombe, C42
Phone: (02) 9351 9423
Fax: (02) 9351 9421
Email: h.knight@cchs.usyd.edu.au
Law Library
Law School, 173-175 Phillip St, Sydney, C13
Phone: (02) 9351 0216
Fax: (02) 9351 0301
Email: library@law.usyd.edu.au
Mathematics Library
Carslaw Building, F07
Phone: (02) 9351 2974
Fax: (02) 9351 5766
Emailmathematics@library.usyd.edu.au
Medical Library
Bosch Building, D05
Phone: (02) 9351 2413
Fax: (02) 9351 2427
Email: medical@library.usyd.edu.au
Music Library
Seymour Centre, J09
Phone: (02) 9351 3534
Fax: (02) 9351 7343
Email: music@library.usyd.edu.au
Nursing Library
88 Mallett St, Camperdown, M02
Phone: (02) 9351 0541
Fax: (02) 9351 0634
Email: nursing@library.usyd.edu.au

Orange Library
Leeds Parade, Orange
Phone: (02) 6360 5594
Fax: (02) 6360 5637
Email: lib@orange.usyd.edu.au
Pharmacy Library
Pharmacy Building, A15
Phone: (02) 9351 2333
Fax: (02) 9351 4445
Email: pharmacy@library.usyd.edu.au
Physics Library
New Wing, Physics Building, A29
Phone: (02) 9351 2550
Fax: (02) 9351 7767
Email: physics@library.usyd.edu.au
Power Research Library
Mills Building, A26
Phone: (02) 9351 2148
Fax: (02) 9351 7323
Email: john.spencer@arthist.usyd.edu.au
Sydney College of the Arts Library
Balmain Rd, Rozelle, N01
Phone: (02) 9351 1036
Fax: (02) 9351 1043
Email: scalib@sca.usyd.edu.au
Sydney Conservatorium of Music Library
109 Pitt St, Sydney, C41
Phone: (02) 9230 3701
Fax: (02) 9230 3707
Email: csymes@conmusic.usyd.edu.au

Mathematics Learning Centre

The Mathematics Learning Centre runs bridging courses in mathematics at the beginning of the academic year (fees apply), and provides on-going support during the year through individual assistance and small group tutorials.
Level 4, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 4061
Fax: (02) 9351 5797
Email: mlc@stuserv.usyd.edu.au
Web: www.usyd.edu.au/su/mlc

Part-time and full-time enrolment

Students are normally considered to be enrolled full-time if they have a HECS or fee weighting of at least 0.375 each semester. Anything under this amount is considered a part-time study load. Note that some faculties have minimum study load requirements for satisfactory progress.

Privacy

The University is subject to the NSW Privacy and Personal Information Protection Act 1998 (the Act). Central to the Act is Part 2 which contains twelve Information Protection Principles (IPPs) which regulate the collection, management, use and disclosure of personal information.

- In response to Section 33 of the Act the University has developed a Privacy Management Plan which includes a new University Privacy Policy incorporating the requirements of the IPPS. Both the Plan and the new University Privacy Policy were endorsed by the Vice-Chancellor on 28 June 2000. The Privacy Management Plan sets out the IPPs and how they apply to functions and activities carried out by the University.

Further information and a copy of the Plan may be found at: www.usyd.edu.au/arms/privacy/. Any questions regarding the Freedom of Information Act, the Privacy and Personal Information Protection Act or the Privacy Management Plan should be directed to:
Tim Robinson: (02) 9351 4263 or
Judith Russell: (02) 9351 2684
Email: foi@maU.usyd.edu.au

Student Centre

Level 1, Carslaw, F07
The University of Sydney
NSW 2006 Australia
The Student Centre enquiry counter can assist with the following types of enquiries:
General Enquiries: (02) 9351 3023
Academic Records: (02) 9351 4109
Discontinuation of Enrolment: (02) 9351 3023
Handbooks: (02) 9351 5057
Prizes: (02) 9351 5060
Fax: (02) 9351 5081, (02) 9351 5350 (Academic Records)

Student identity cards

Student identity cards will be provided to all commencing students at in-person enrolment or will be mailed to all continuing students who have successfully pre-entrolled. The card must be carried with you at all times on the site of the University, it must be displayed during examinations and must be produced on demand of any member of the staff or any other officer of the University. The card incorporates a photograph which you are required to provide. The photograph is to be colour and passport-sized showing your head and shoulders only. The photograph will be laminated to your student identity card on the day of your in-person enrolment if you are a commencing student. Pre-enrolling continuing students will be advised where to attend to have their photos and cards laminated. Student identity cards also function as transport concession cards for those students deemed eligible by the transport authorities. Transport concession eligibility will be confirmed with the application of a holographic sticker on the card.

Student Services

Student Services exists to help you achieve your educational goals by providing personal, welfare, and academic support services to facilitate your success at University. Many factors can impact on your wellbeing while studying at University and Student Services can assist you in managing and handling these more effectively. Refer to Accommodation Service, Casual Employment Service, Child Care, Disability Service, Financial Assistance Office, Learning Centre, Mathematics Learning Centre.
Room 711, Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Web: www.usyd.edu.au/su/stuserv

Timetabling Unit

The timetabling unit in the Student Centre is responsible for producing students' class and tutorial timetables. Students can obtain their Semester 1 timetables from the Wednesday of Orientation Week via the web.

The Sydney Conservatorium of Music operates in accordance with a local calendar of dates and produces a complete timetable for all teaching that it delivers. The timetable is available on enrolment at the Conservatorium.

Other student assistance

Careers information

The Careers Centre provides careers information, advice and counselling, and assists in finding course-related employment both while you're studying and when you're ready to commence your career.
Ground floor, Mackie Building, K01
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 3481
Fax: (02) 9351 5134
Email: info@careers.usyd.edu.au
Web: www.careers.usyd.edu.au

Continuing Education

University Preparation courses; bridging courses; Accounting Extension program; study skills courses; essay writing courses; and many others for career development, skill enhancement and general interest.
Centre for Continuing Education
Mackie Building, KOI
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 2907
Fax: (02) 9351 5022
Email: info@cce.usyd.edu.au
Web: www.usyd.edu.au/cce

University Health Service

Offers full general practitioner services and emergency medical care to all members of the University community.
University Health Service (Wentworth)
Level 3, Wentworth Building, G01
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 3484
Fax: (02) 9351 4110
University Health Service (Holme)
Ground Floor, Holme Building, A09
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 4095
Fax: (02) 9351 4338
Email: director@unihealth.usyd.edu.au
Web: www.unihealth.usyd.edu.au/

Koori Centre and Yooroang Garang

The Koori Centre provides tutorial assistance: access to computers, Indigenous counsellor, Aboriginal Studies library study rooms, Orientation program at the beginning of the year, and assistance in study and learning skills. Education Unit: courses in Education for ATSI students. Indigenous Studies Unit: aims to increase the awareness of Indigenous Australian issues through courses across the University.
Ground Floor, Old Teachers' College, A22
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 2046 General Enquiries
(02) 9351 7003 Liaison Officer
Fax: (02) 9351 6923
Email: koori@koori.usyd.edu.au
Web: www.koori.usyd.edu.au/

Language Centre

The Language Centre supports the teaching and research of the 34 languages taught through the Faculty of Arts and also offers self-study materials in over 140 languages. Members have access to audio-visual kits, reference books, videos, satellite television, computer software and magazines. The Language Centre also runs courses in Spanish, Russian, Portugese, Modern Irish and Welsh.
Level 2, Christopher Brennan Building, A18
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 2371
Fax: (02) 9351 4724
Email: language.enquiries@language.usyd.edu.au
Web: www.usyd.edu.au/langcent

Scholarships

The Scholarships Office is the University's internal and external point of contact for matters related to scholarships and awards. It provides information on undergraduate and postgraduate award opportunities available at the University as well as from external funding bodies, and advice to faculties and administrative units on the establishment and administration of their specific awards. The Scholarships Office is also responsible for administering University-wide awards and major government funded research scholarships.
Research and Scholarships Office
Scholarships Administration
Room K4.01, Main Quadrangle, A14
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 3250
Fax: (02) 9351 3256
Email: scholars@reschols.usyd.edu.au
Web: www.usyd.edu.au/su/reschols/scholarships/schol.html

Student organisations

Students' Representative Council

Level 1, Wentworth Building, G01
The University of Sydney
NSW 2006 Australia
Phone: (02) 9660 5222 Editors, Honi Soit/Legal Aid
(02) 9660 4756 Second-hand Bookshop
(02) 9351 0691 Mallett St
(02) 9230 3777 Pitt St-Conservatorium
Fax: (02) 9660 4260
Email: postmaster@src.usyd.edu.au

Sydney University Sports Union

Provides services, facilities and clubs for sport, recreation and fitness.
Sports and Aquatic Centre, G09
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 4960
Fax: (02) 9351 4962
Email: sportsunion@susu.usyd.edu.au
Web: www.susport.com.au

University of Sydney Union

Provides welfare, social and recreational services to the University community.
Holme Building, A09
The University of Sydney
NSW 2006 Australia
Phone: (02) 9563 6000 Switchboard/Enquiries
(02) 9563 6282 Academic Dress
(02) 9563 6103 ACCESS Centre, Manning
(02) 9563 6269 Campus Store, Holme
(02) 9563 6016 Campus Store, Wentworth
(02) 9563 6160 Clubs and Societies Office
(02) 9563 6010 School Tutoring Coordinator
(02) 9563 6032 Union Broadcasting Studio
(02) 9563 6115 Welfare & Information Services Manager
Fax: (02) 9563 6239
Email: email@usu.usyd.edu.au
Web: www.usu.usyd.edu.au/

Women's Sports Association

Provides for students, predominantly women, to participate in sport and recreation through the provision of facilities, courses and personnel.
Room 214, Sports Centre, A30
The University of Sydney
NSW 2006 Australia
Phone: (02) 9351 8111, (02) 9351 8112
Fax: (02) 9660 0921
Email: secretary@suwsa.usyd.edu.au
Web: www.usyd.edu.au/su/suwsa/welcome.html

Glossary

This glossary describes terminology in use at the University of Sydney.

Academic Board
The Academic Board is the senior academic body within the University. In conjunction with Faculties, the Academic Board has responsibility for approving, or recommending to Senate for approval, new or amended courses and Units of Study (UoSs), and policy relating to the admission of students. (For further information, see the University Calendar)

Academic Cycle
The Academic Cycle is the program of teaching sessions offered over a year. Currently the cycle runs from the enrolment period for 1st Semester through to the completion of the processing of results at the end of 2nd Semester.
{See also Stage)

Academic Record
The Academic Record is the complete academic history of a student at the University. It includes, among other things, personal details, all Units of Study and Courses taken, assessment results (marks and grades), awards and prizes obtained, infringements of progression rules, approvals for variation in course requirements and course leave, thesis and supervision details.

Access to a student's Academic Record is restricted to authorised University staff. A student's Academic Record is not released to a third party without the written authorisation of the student

{See also Academic Transcript)

Academic Transcript
An Academic Transcript is a printed statement setting out a student's academic record at the University. There are two forms of Academic Transcripts: External and Internal.
{See also External Transcript, Internal Transcript)

Academic Year
An Academic Year is a normal full-time program taken in a course in a year. Some courses consist of stages, which may readily be equated with Academic Year. Others use the aggregation of credit points to do this (eg, 48 credit points = an Academic Year).
{See also Academic Cycle, Stage)

Addresses
All enrolled students need to have a current postal address recorded on FlexSIS to which all Official University correspondence is sent.
{See also Business Address, Permanent Home Address, Semester Address, Temporary Address)

Admission
Admission is governed by the University's Admission Policy and is the process for identifying applicants eligible to receive an initial offer of enrolment in a course at the University. Admission to most courses is based on performance in the HSC with applicants ranked on the basis of their UAI. Other criteria such as a portfolio, interview, audition, or results in standard tests may also be taken into account for certain courses.

Admission (deferment)
An applicant who receives an offer of admission to a course may apply to defer enrolment in that course for one semester or one academic cycle.

Admission Basis
The main criterion used by a Faculty in assessing an application for admission to a course. The criteria used include, among other things, previous secondary, TAFE or tertiary studies, work experience, Special Admission and the Universities Admission Index (UAI).

Admission Mode
Admission Mode is a classification based on how a student was admitted to a course, for example 'UAC or 'direct'.

Admission Period
The period during which applications for admission to courses are considered. The main Admission Period takes place before the first semester, but there may also be an Admission Period for mid year applicants before the beginning of the second semester and other Admission Periods.

Admission Reply
A code used by FlexSIS to indicate whether an applicant who has received an offer has accepted the offer or not.

Admission Result
A code used by FlexSIS to indicate the result of a direct application to study at the University (eg, Offer, Unsuccessful, Withdrawn).

Admission Year
The year the student began the course.

Advanced Diplomas
{See Award Course)

Advanced Standing
{See Credit)

Advisor
A member of academic staff appointed in an advisory role for some postgraduate coursework students.
{See also Associate Supervisor, Instrumental Supervisor (teacher), Research Supervisor, Supervision)

Annual Progress Report
The Annual Progress Report is a form issued by Faculties which is used to monitor a research student's progress each year. The form provides for comments by the student, the Supervisor, the Head of the Department and the Dean (or nominee). The completed form is attached to the student's official file.

FlexSIS records that the form has been sent out and that it has been satisfactorily completed.

APA
Australian Postgraduate Awards. *(See also* Scholarships, UPA)

Appeals
Students may lodge appeals against academic or disciplinary decisions. FlexSIS will record an academic appeal (eg, against exclusion) while they are under consideration and will record the outcome of the appeal. Disciplinary (that is, non-academic) appeals are not recorded on FlexSIS.

Assessment
The process of measuring the performance of students in UoSs and courses. The assessment of performance in a UoS may include examinations, essays, laboratory projects, or assignments.
(See also Board of Examiners, Result Processing, Result Processing Schedule)

Associate Supervisor
A person who is appointed in addition to the Supervisor of a research student who can provide the day-to-day contact with the candidate or provide particular expertise or additional experience in supervision.
(See also Advisor, Instrumental Supervisor (teacher), Research Supervisor, Supervision)

Assumed Knowledge
For some Units of Study, a student is assumed to have passed a relevant subject at the HSC and this is called Assumed Knowledge. While students are generally advised against taking a Unit of Study for which they do not have the assumed knowledge, they are not prevented from enrolling in the Unit of Study.
(See also Prerequisite)

Attendance Mode
Refers to whether a Unit of Study is taken by the student internally (ie, by attending classes at a campus of the university) or externally (ie, remotely by correspondence or other distance education means). While most Units of Study are offered internally, the Faculty of Health Sciences and the Orange Agricultural College offer Units of Study externally.

Attendance Type
Refers to whether the student is studying part-time or full-time. For coursework students this is a function of course load - ie, the proportion being undertaken by the student of the normal full-time load specified for the course in which the student is enrolled. To be considered full-time, a coursework student must undertake at least 0.75 of the normal full-time load over the academic cycle or at least 0.375 if only enrolling in half of an academic year (one semester). It is important to note, however, that, for some purposes, to be considered full-time a student may need to be enrolled in at least 0.375 in each session. Research students, with the approval of their Faculty, nominate whether they wish to study part-time or full-time. The Attendance Status is then recorded on FlexSIS as part of the application or enrolment process.
{See also Coursework, Student Load)

AusAID
Australian Agency for International Development.

Award Course
An award course is a formally approved program of study that can lead to an academic award granted by the University. The University broadly classifies courses as Undergraduate and Postgraduate (research and coursework). The Award Courses offered by the University are:
Higher Doctorates
Doctor of Philosophy (PhD)
Doctorates by research and advanced coursework
Master's Degree
Graduate Diploma
Graduate Certificate
Bachelor's Degrees
Advanced diplomas
Diplomas
Certificates
{See also Major, Minor and Stream)

Bachelor's Degree
The highest undergraduate award offered at the University of Sydney. A Bachelor's degree course normally requires three or four years of full-time study (or the part-time equivalent).
{See also Award Course)

Barrier
A barrier is an instruction placed on a student's FlexSIS record that prevents the student from re-enrolling or graduating.
{See also Deadline (fees), Suppression of Results)

Board of Examiners
A Board of Examiners was a body appointed by a Faculty or Board of Studies which met to approve the results of all students undertaking Courses supervised by that Faculty or Board of Studies. Boards of Examiners were dis-established following revision of the University's examination procedures in 2000.
{See also Assessment, Result Processing, Result Processing Schedule)

Board of Studies
An academic body which supervises a course or courses and which is similar to a Faculty except that it is headed by a Chair rather than a Dean and does not supervise PhD candidates.

Bursaries
{See Scholarships)

Business Address
FlexSIS can record a student's Business Address and contact details.
{See also Addresses, Permanent Home Address, Semester Address, Temporary Address)

Cadigal Program
The Cadigal Program is a University wide access and support scheme for Aboriginal and Torres Strait Islanders.

Campus
The grounds on which the University is situated. There are eleven campuses of the University of Sydney: Burren Street (Australian Graduate School of Management), Camperdown and Darlington ('Main Campus'), Camden (Agriculture and Veterinary Science), Conservatorium (Conservatorium of Music), Cumberland (Health Sciences), Mallett Street (Nursing), Orange (Faculty of Rural Management), Rozelle (Sydney College of the Arts), St James (Law) and Surry Hills (Dentistry).

Census date
{See HECS Census Date)

Ceremony
{See Graduation Ceremony)

Chancellor
The non-executive head of the University. An honorary position, the Chancellor chairs meetings of the University's governing body, the Senate, and presides over graduation ceremonies amongst other duties.

Class List
A listing of all Currently Enrolled students in a particular Unit of Study.
{See also Unit of Study)

Combined Course
A course which leads to two awards. For example the Arts/Law course leads to the separate awards of Bachelor of Arts and Bachelor of Laws.

Combined degree
{See Combined Course)

Commencing Student
A student enrolling in an award course at the University of Sydney for the first time. The DETYA Glossary provides a more detailed definition.

Compulsory Subscription Rates
There are two rates for some annual subscriptions: full-time and part-time.
{See also Compulsory Subscriptions)

Compulsory Subscription Waiver Provision
Certain students over a certain age or with disabilities or medical conditions may be exempted from the subscription to the sports body.

Students with a conscientious objection to the payment of subscriptions to Unions of any kind may apply to the Registrar for exemption. The Registrar may permit such a student to make the payment to the Jean Foley Bursary Fund instead.
{See also Compulsory Subscriptions)

Compulsory Subscriptions
Each enrolled student is liable to pay annual (or semester) subscriptions as determined by the Senate to the student organisations at the University. These organisations are different on different campuses. There are different organisations for undergraduate and postgraduate students.

At the Main Campus, compulsory submissions depend on the level of study:
- Undergraduate - the University of Sydney Union, Students Representative Council (SRC) and the University Men's Sports Union or the University Women's Sports Association.
- Postgraduate - the University of Sydney Union and the Sydney University Postgraduate Representative Association (SUPRA).

At other campuses, student organisations include:
- the Cumberland Student Guild
- student organisations at Orange Agricultural College and the Sydney College of the Arts.

{See also Compulsory Subscription Rates, Compulsory Subscription Waiver Provision, Joining Fee, Life membership)

Confirmation of Enrolment Status Form
A Confirmation of Enrolment Status Form is issued to students after enrolment showing the course and the UoSs they are enrolled in, together with the UoS credit point value of the UoSs and the HECS weights. Until all fees are paid, it is issued provisionally.

A new Confirmation of Enrolment form is produced every time a student's enrolment is varied.
For Postgraduate Research students the form also lists candidature details and Supervisor information.

Where students have an appointed adviser, the adviser information is also shown.

Convocation
Convocation is the body comprising all graduates of the University.

Core Unit of Study
A Unit of Study (UoS) that is compulsory for the course or subject area.
{See also Unit of Study (UoS))

Corequisite
A Corequisite is a Unit of Study, which must be taken in the same semester or year as a given Unit of Study (unless it has already been completed). These are determined by the Faculty or Board of Studies concerned, published in the Faculty Handbook and shown in FlexSIS.
(See also Prerequisite, Waiver)

Course
(See Award Course)

Course Alias
Each course in FlexSIS is identified by a unique five-digit Alpha-Numeric code.

Course Code
(See Course Alias)

Course Leave
Students (undergraduate and postgraduate) are permitted to apply for a period away from their course without losing their place. Course leave is formally approved by the supervising Faculty for a minimum of one semester and recorded on FlexSIS (leave for periods of less than one semester should be recorded internally by the Faculty). Students on leave are regarded as having an active candidature, but they are not entitled to a student card. At undergraduate level leave is not counted towards the total length of the course. Students who are absent from study without approved leave may be discontinued and may be required to reapply formally for admission. In respect of research students the term 'Suspension of Candidature' was previously used to describe students on course leave.
Course (Research)

A classification of courses in which students undertake supervised research leading to the production of a thesis or other piece of written or creative work over a prescribed period of time. The research component of a research course must comprise 66% or more of the overall course requirements.

Course Rules
Course Rules govern the allowable enrolment of a student in a Course; eg, a candidate may not enrol in Units of Study having a total value of more than 32 credit points per semester. Course Rules also govern the requirements for the award of the Course; eg, a candidate must have completed a minimum of 144 credit points. Course Rules may be expressed in terms of types of Units of Study taken, length of study, and Credit Points accumulated.

Course Suspension
(See Course Leave)

Course Transfer
A Course Transfer occurs where a student changes from one course in the University to another course in the University without the requirement for an application and selection (eg, from a PhD to a Master's program in the same Faculty).

Course Type
Course Type is a DETYA code.

Coursework
Coursework is a classification used to describe those courses that consist of UoSs rather than research work. All Undergraduate courses are coursework programs. Postgraduate courses can be either research courses or coursework courses.
(See also Course (Research)

Credit
Students admitted to a course at the University may be granted Advanced Standing based on previous attainment in another course at the University, or at another institution. The credit points granted count towards the course.

Credit may be granted as specific credit or non-specific credit.

Specific credit is the recognition of previously completed studies as directly equivalent to UoSs. Specific credit is recorded on FlexSIS as credit for a particular UoS or UoSs.

Non-Specific credit takes the form of a 'block credit' for a specified number of credit points at a particular level (eg, 12 Junior level credit points). These credit points may be in a particular subject area. The credit is not linked to a specific UoS.

(See also Waiver)

Credit Points
Credit Points are a measure of value indicating the contribution each Unit of Study provides towards meeting course completion requirements stated as a total Credit Point value. Each Unit of Study will have a Credit Point value assigned to it, normally in the range 3 to 24. Resolutions of Senate set the number and level of Credit Points required for graduation.

Cross-institutional Enrolment
Cross-institutional Enrolment is an enrolment in Units of Study at one university to count towards an award course at another university. Cross-institutional enrolments incur a HECS liability or tuition fee charge at the institution at which the UoS is being undertaken. Students pay compulsory subscriptions to one university only (usually their home university - ie, the university which will award their degree).

DAC (Data Audit Committee)
DAC is a sub-committee of the VCAC Enrolment Working Party, chaired by the Registrar, with membership including the Deans, the Student Centre, FlexSIS and the Planning Support Office. Its role is to oversee the integrity and accuracy of the Course and Unit of Study data as strategic university data. It has a role in advising the Academic Board on suggested policy changes with relation to Course and Unit of Study data.

Deadlines (enrolment variations)
(See Enrolment Variations)

Deadlines (fees)
The University has deadlines for the payment of fees (eg, HECS, Compulsory Subscriptions, course fees etc). Students who do not pay fees by these deadlines may have their enrolment cancelled or they may have a barrier placed on the release of their record.
(See also Barrier)

Dean
The head of a Faculty or the principal or director of a College (such as the Conservatorium of Music or the Sydney College of Arts).

Dean's Certificate
A statement from the Dean certifying that all requirements, including fieldwork and practical work, have been met and that the student is eligible to graduate. Not all Faculties use Deans' Certificates. In Faculties that do, qualified students have 'Dean's Certificate' noted on their academic record.

DETYA
The Department of Education Training and Youth Affairs is the Commonwealth Government Department responsible for Higher Education. The University is required to provide DETYA with information about its students three times a year. The Government in its funding deliberations uses this information.

Deferment
(See Admission (deferment), Leave)

Degree
(See also Award Course, Bachelor's Degree)

Department
For the purposes of FlexSIS, a Department is the academic unit, which is responsible for teaching and examining a UoS. It may be called a School, a Department, a Centre or a Unit within the University.

Differential HECS
(See Higher Education Contribution Scheme (HECS))

Diploma
The award granted following successful completion of Diploma course requirements. A Diploma course usually requires less study than a degree course. Graduate Diploma courses are only available to students who already hold an undergraduate degree.
(See also Award Course)

Direct Admissions
For some courses, applications may be made directly to the University. Applications are received by Faculties or the International Office, registered on FlexSIS and considered by the relevant Department or Faculty body. Decisions are recorded on FlexSIS and FlexSIS produces letters to applicants advising them of the outcome.
(See also Admission, UAC Admissions)

Disability Information
Students may inform the University of any temporary or permanent disability, other than a financial disability, which affects their life as a student. Disability Information is recorded in FlexSIS but it is only visible to particular authorised users because of its sensitive nature.

Discipline Codes
Discipline Codes are four-letter codes for each area of study available at the university (eg, CHEM Chemistry, ECON Economics)

Discipline Group
A DETYA code used to classify UoSs in terms of the subject matter being taught or being researched.

Discontinuation (Course)
(See Enrolment Variation)

Discontinuation (Unit of Study)
(See Enrolment Variation)

Dissertation
A Dissertation is a written exposition of a topic and may include original argument substantiated by reference to acknowledged authorities. It is a required Unit of Study for some postgraduate award courses in the Faculties of Architecture and Law.

Doctor of Philosophy (PhD)
(See Award Course, Doctorate, PhD)

Doctorate
The Doctorate and the PhD are high-level postgraduate awards available at the University of Sydney. A Doctorate course normally involves research and coursework; the candidate submits a thesis that is an original contribution to the field of study. Entry to a Doctorate course often requires completion of a Master's degree course. Note that the Doctorate course is not available in all Departments at the University of Sydney.
(See also Award Course, PhD)

Earliest date
(See Research Candidature)

EFTSU
The Equivalent Full-Time Student Unit (EFTSU) is a measure of student load expressed as a proportion of the workload for a standard annual program for a student undertaking a full year of study in a particular award course. A student undertaking the standard annual program of study (normally 48 credit points) generates one EFTSU.

EFTYR
The Effective Full-time Enrolment Year (EFTYR) is a calculation of how long, in terms of equivalence to full-time years of enrolment, a student has been enrolled in a course. If a student has always been full-time, the calculation is straightforward (for example, the fifth year of enrolment is EFTYR 5). If the student has had a mixture of part-time and full-time enrolment, this can be equated with an EFTYR.
(See also Stage)

Enrolment
A student enrolls in a course by registering with the Supervising Faculty in the Units of Study to be taken in the coming year, semester or session. The student pays whatever fees are owing to the University by the deadline for that semester. New students currently pay on the day they enrol which is normally in early February. Students already in a course at the University re-enrol each year or semester; for most students Pre-enrolment is required.
(See also Pre-enrolment)

Enrolment Non Award
Non Award enrolment is an enrolment in a Unit or Units of Study, which does not count towards a formal award of the University. Normally Tuition Fees are levied on non-award Units of Study.

Enrolment Status
A student's enrolment status is either:

- Enrolled; or
- Not enrolled

An enrolment status is linked to an enrolment states reason or category.

Enrolment Status Reason/ Category
Not enrolled status reasons/categories include: Withdrawn, Totally Discontinued, Cancelled, on Leave (suspended), Transferred, Lapsed, Terminated, Qualified and Conferred.

Enrolment Variation
Students may vary their enrolment at the beginning of each semester. Each Faculty determines its deadlines for variations, but HECS liability depends on the HECS Census Date. *(See also* HECS)

Enrolment Year
See EFTYR, Stage

Examination
See Examination Paper Code, Examination Period, Supplementary Exams

Examination Paper Code
A code that identifies each individual examination paper. Used to help organise examinations.

Examination Period
The Examination Period is the time set each semester for the conduct of formal examinations.

Exchange Student
An Exchange student is either a student of this University who is participating in a formally agreed program involving study at an overseas university or an overseas student who is studying here on the same basis. The International Office provides administrative support for some exchanges.

Students at this University will have recorded on their academic record the fact that they have participated in an exchange program.

Exclusion
The Faculty may ask a student whose academic progress is considered to be unsatisfactory to Show Cause why the student should be allowed to re-enrol. If the Faculty deems the student's explanation unsatisfactory or if the student does not provide an explanation the student may be excluded either from a Unit of Study or from a course. An excluded student may apply to the Faculty for permission to re-enrol. Normally at least two years must have elapsed before such an application would be considered.

University policy relating to exclusion is set out in the Calendar.

(See also Senate Appeals)

External

See Attendance Mode

External Transcript
An External Transcript is a certified statement of a student's academic record printed on official university security paper. It includes the student's name, any credit granted, all courses the student was enrolled in and the final course result and all UoSs attempted within each course together with the UoS result (but not any UoS which has the status of Withdrawn). It also includes any scholarships or prizes the student has received. Two copies are provided to each student on graduation (one with marks and grades for each UoS and one with grades only). External transcripts are also produced at the request of the student. The student can elect either to have marks appear on the transcript or not.

(See also Academic Transcript, Internal Transcript)

Faculty
A Faculty, consisting mainly of academic staff members and headed by a dean, is a formal part of the University's academic governance structure, responsible for all matters concerning the award courses that it supervises (see the 1999 Calendar, pp 110-111). Usually, a Faculty office administers the Faculty and student or staff inquiries related to its courses. The Calendar sets out the constitution of each of the University's 17 Faculties.
(See also Board of Studies, Supervising Faculty)

Fail
A mark of less than 50% which is not a Concessional Pass.
(See also Results)

Fee Paying Students
Fee Paying Students are students who pay tuition fees to the University and are not liable for HECS.

Fee Rate
Local fees are charged in bands, a band being a group of subject areas. The bands are recommended by Faculties and approved by the DV-C (Planning and Resources).

Fee Type
Fee Type can be International or Local.

FlexSIS
FlexSIS is the computer-based Flexible Student Information System at the University. FlexSIS holds electronically details of courses and UoSs being offered by the University and the complete academic records of all students enrolled at the University. FlexSIS also holds the complete academic records of many (but not all) past students of the university. For past students whose complete records are not held on FlexSIS, there will be a reference on FlexSIS to card or microfiche records where details are kept.

Full-Time Student
(See Attendance Status, EFTSU)

Grade
A Grade is a result outcome for a Unit of Study normally linked with a mark range. For example, in most Faculties, a mark in the range 85-100 attracts the Grade 'High Distinction' ('HD').
(See also Mark)

Graduand
A Graduand is a student who has completed all the requirements for an award course but has not yet graduated.
(See also Graduation, Potential Graduand)

Graduate
A Graduate is a person who holds an award from a recognised tertiary institution.
(See also Graduand, Graduation)

Graduate Certificate
(See Award Course)

Graduate Diploma
(See Award Course)

Graduate Register
The Graduate Register is a list of all graduates of the University.
(See also Graduation)

Graduation
Graduation is the formal conferring of awards either at a ceremony or in absentia.
(See also In absentia, Potential Graduand)

Graduation Ceremony
A Graduation Ceremony is a ceremony where the Chancellor confers awards upon graduands. The Registrar publishes annually the schedule of graduation ceremonies.

HECS
See Higher Education Contribution Scheme (HECS)

HECS Census Date
The date at which a student's enrolment, load and HECS liability are finalised before reporting to DETYA. The following dates apply:
- 1st Semester, 31 March
- 2nd Semester, 31 August

HECS Code
A code used by DETYA to identify the HECS status of a student (eg, 10 Deferred, 11 Upfront).

Higher Doctorates
(See Award Course)

Higher Education Contribution Scheme (HECS)
All students, except international students, local fee-paying students and holders of certain scholarships are obliged to contribute towards the cost of their education under the Higher Education Contribution Scheme (HECS). HECS liability depends on the load being taken.

Current students, except possibly those who began their studies prior to 1997, have a HECS rate charged for each Unit of Study in their degree program which depends on the 'discipline group' it is in, and the 'band' to which the Government has assigned it. Theses are all determined annually by the Government.

Honorary Degrees
A degree Honoris Causa (translated from the Latin as 'for the purpose of honouring') is an honorary award, which is conferred on a person whom the University wishes to honour.

A degree Ad Eundem Gradum (translated as 'at the same level') is awarded to a member of the academic staff who is not a graduate of the University in recognition of outstanding service to the University. The award of an honorary degree is noted on the person's academic record.

Honours
Some degrees may be completed 'with Honours'. This may involve either the completion of a separate Honours Year or additional work in the later years of the course or meritorious achievement over all years of the course. Honours are awarded in a Class (Class 1, Class II, Class IE) and sometimes there are two divisions within Class n.

HSC
The HSC is the NSW Higher School Certificate, which is normally completed at the end of year 12 of secondary school. The UAI (Universities Admission Index) is a rank out of 100 that is computed from a student's performance in the HSC.

In absentia
In absentia is Latin for 'in the absence of. Awards are conferred in absentia when a graduand does not, or cannot, attend the graduation ceremony scheduled for them.

Those who have graduated in absentia may later request that they be presented to the Chancellor at a graduation ceremony.
{See also Graduation)

Instrumental Supervisor (teacher)
All students at the Conservatorium of Music and BMus students on the Camperdown campus have an instrumental teacher appointed.

{See also Advisor, Associate Supervisor, Research Supervisor, Supervision.)

Internal

{See Attendance Mode)

Internal Transcript
An Internal Transcript is a record of a student's academic record for the University's own internal use. It includes the student's name, SID, address, all courses in which the student was enrolled and the final course result and all UoSs attempted within each course together with the UoS result.
{See also Academic Transcript, External Transcript)

International Student
An International Student is required to hold a visa to study in Australia and may be liable for international tuition fees. Any student who is not an Australian or New Zealand citizen or a permanent resident of Australia is an international student. New Zealand citizens are not classified as international students but have a special category under HECS that does not permit them to defer their HECS liability.
{See also Local Student, Student Type)

Joining Fee
Students enrolling for the first time pay, in addition, a joining fee for the University of Sydney Union or equivalent student organisation.
{See also Compulsory Subscription)

Leave
{See Course Leave)

Life membership
Under some circumstances (eg, after five full-time years of enrolments and contributions) students may be granted life membership of various organisations, which means they are exempt from paying yearly fees.
{See also Compulsory Subscription)

Load
Load for an individual student is the sum of the weights of all the UoSs in which the student is enrolled.
{See also EFTSU, HECS)

Local Student
A Local Student is either an Australian or New Zealand citizen or Australian permanent resident. New Zealand citizens are required to pay their HECS upfront.
{See also Fee type, HECS, International Student)

Major
A Major is a defined program of study, generally comprising specified Units of Study from later stages of the Award Course. Students select and transfer between Majors by virtue of their selection of Units of Study. One or more Majors may be prescribed in order to satisfy course requirements.
{See also Award Course, Minor and Stream)

Major Timetable Clash
Used by FlexSIS to denote occasions when a student attempts to enrol in Units of Study which have so much overlap in the teaching times that it has been decided that students must not enrol in the units together.

Mark
An integer (rounded if necessary) between 0 and 100 inclusive, indicating a student's performance in a UoS.
{See also Grade)

Master's Degree
A postgraduate award. Master's degree courses may be offered by coursework, research only or a combination of coursework and research. Entry to the course often requires completion of an Honours year at an undergraduate level.
{See also Award Course)

Method of candidature
A course is either a research course or a coursework course and so the Methods of Candidature are 'Research' and 'Coursework'.
{See also Course, Course (Research), Coursework)

Minor
A Minor is a defined program of study, generally comprising Units of Study from later stages of the Award Course and requiring a smaller number of Credit Points than a Major. Students select and transfer between Minors (and Majors) by virtue of their selection of Units of Study. One or more Minors may be prescribed in order to satisfy course requirements.
{See also Award Course, Major and Stream)

Minor Timetable Clash
Used by FlexSIS to denote occasions when a student attempts to enrol in Units of Study which have some identical times of teaching.

Mutually Exclusive Units of Study
{See Prohibited Combinations of Units of Study)

MyUni
MyUni is a personalised space for staff and students on the University of Sydney's intranet, called USYDnet. MyUni is used to deliver information and services directly through a central location, while also allowing users to customise certain information. Students are able to access such services as Exam Seat Numbers, Results, Timetables and FlexSIS Enrolment Variations on MyUni.

Non Award
{See Enrolment - Non Award)

OPRS

Overseas Postgraduate Research Scholarship.

Orientation Week
Orientation or 'O Week', takes place during the week prior to lectures in Semester 1. During O Week, students can join various clubs, societies and organisations, register for courses with departments and take part in activities provided by the University of Sydney Union.

Part-time student
{See Attendance Status, EFTSU)

Permanent Home Address
The Permanent Home Address is the address for all official University correspondence both inside and outside of Semester time (eg, during Semester breaks), unless overridden by Semester Address.
{See also Addresses, Business Address, Semester Address, Temporary Address)

PhD
The Doctor of Philosophy (PhD) and other Doctorate awards are the highest awards available at the University of Sydney. A PhD course is normally purely research-based; the candidate submits a thesis that is an original contribution to the field of study. Entry to a PhD course often requires completion of a Master's degree course. Note that the PhD course is available in most departments in the University of Sydney.
{See also Award Course, Doctorate)

Postgraduate
A term used to describe a course leading to an award such as Graduate Diploma, a Master's Degree or PhD, which usually requires prior completion of a relevant undergraduate degree (or diploma) course. A 'postgraduate' is a student enrolled in such a course.

Potential Graduand
Potential Graduands are students who have been identified as being eligible to graduate on the satisfactory completion of their current studies.
{See also Graduand, Graduation)

Pre-enrolment
Pre-enrolment takes place in October for the following year. Students indicate their choice of UoS enrolment for the following year. After results are approved, registered students are regarded as enrolled in those UoSs they chose and for which they are qualified. Their status is 'enrolled' and remains so provided they pay any money owing or comply with other requirements by the due date. Re-enrolling students who do not successfully register in their Units of Study for the next regular session are required to attend the University on set dates during the January/February enrolment period. Pre-enrolment is also known as Provisional Re-enrolment. *{See also* Enrolment)

Prerequisite
A prerequisite is a Unit of Study that is required to be completed before another UoS can be attempted. *{See also* Assumed Knowledge, Corequisite, Waiver)

Prizes
Prizes are awarded by the University, a Faculty or a Department for outstanding academic achievement. Full details can be found in the University Calendar.

Probationary Candidature
A Probationary Candidate is a student who is enrolled in a postgraduate course on probation for a period of time up to one year. The Head of Department is required to consider the candidate's progress during the period of probation and make a recommendation for normal candidature or otherwise to the Faculty.

Progression
{See Course Progression)

Prohibited Combinations of Units of Study
When two or more Units of Study contain a sufficient overlap of content, enrolment in any one such Unit prohibits enrolment in any other identified Unit. A Unit related in this way to any other Unit is linked in Tables of Units of Study via use of the symbol N to identify related prohibited Units.

Provisional Re-enrolment
{See Pre-enrolment)

Qualification
A qualification is an academic attainment recognised by the University.

Registrar
The Registrar is responsible to the Vice-Chancellor for the keeping of official records and associated policy and procedures within the University. *{See* the University Calendar for details.)

Registration
In addition to enrolling with the Faculty in Units of Study, students must register with the Department responsible for teaching each unit. This is normally done during Orientation Week. Note that unlike enrolment, registration is not a formal record of Units attempted by the student.

Research Course
{See Course (Research))

Research Supervisor
A Supervisor is appointed to each student undertaking a research postgraduate degree. The person will be a full-time member of the academic staff or a person external to the University appointed in recognition of their association with the clinical teaching or the research work of the University. A Research Supervisor is commonly referred to as a Supervisor. *{See also* Advisor, Associate Supervisor, Instrumental Supervisor (teacher), Supervision)

Resolutions of Senate
Regulations determined by the Senate of the University of Sydney that pertain to degree and diploma course requirements and other academic or administrative matters.

Result Processing
Refers to the processing of assessment results for UoSs. Departments tabulate results for all assessment activities of a UoS and assign preliminary results for each UoS. Preliminary results are considered by the relevant Board of Examiners, which approves final results. Students are notified of results by result notices that list final marks and grades for all UoSs. *{See also* Assessment, Examination Period)

Result Processing Schedule
The Result Processing Schedule will be determined for each Academic Cycle. It is expected that all Departments and Faculties will comply with this schedule. *{See also* Assessment, Examination Period, Result Processing)

Results
The official statement of the student's performance in each Unit of Study attempted, as recorded on the academic transcript, usually expressed as a grade.

HD
High Distinction, a mark of 85-100

D
Distinction, a mark of 75-84

CR
Credit, a mark of 65-74

P
Pass, a mark of 50-64

R
Satisfied requirements. This is used in Pass/Fail only outcomes

UCN
Unit of Study continuing. Used at the end of semester for UoSs that have been approved to extend into a following semester. This will automatically flag that no final result is required until the end of the last semester of the UoS.

PCON
Pass (Concessional), a mark of 46—49. Use of this grade is restricted to those courses that allow for a Concessional Pass of some kind to be awarded. A student may re-enrol in a Unit of Study for which the result was PCON. Each faculty will determine and state in its course regulations what proportion, if any, may count - eg, 'no more than one sixth of the total credit points for a course can be made up from PCON results'.

F
Fail. This grade may be used for students with marks from 46-49 in those faculties which do not use PCON.

AF
Absent Fail. Includes non-submission of compulsory work (or non- attendance at compulsory labs etc) as well as failure to attend an examination.

W
Withdrawn. Not recorded on an external transcript. This is the result that obtains where a student applies to discontinue a Unit of Study by the HECS Census Date (ie, within the first four weeks of enrolment).

DNF
Discontinued - Not to count as failure. Recorded on external transcript. This result applies automatically where a student discontinues after the HECS Census Date but before the end of the seventh week of the semester (or before half of the Unit of Study has run, in the case of Units of Study which are not semester-length). A faculty may determine that the result of DNF is warranted after tfiis date if the student has made out a special case based on illness or misadventure.

DF
Discontinued - Fail. Recorded on transcript. This applies from the time DNF ceases to be automatically available up to the cessation of classes for the Unit of Study.

MINC
Incomplete, with a mark of at least 50. This result may be used when examiners have grounds (such as illness or misadventure) for seeking further information or for considering additional work from the student before confirming the final mark and passing grade. Except in special cases approved by the Academic Board, this result will be converted to a normal passing mark and grade either:

(a) by the Dean at the review of examination results conducted pursuant to section 2 (4) of the Academic Board policy 'Examinations and Assessment Procedures'; or

(b) automatically to the indicated mark and grade by the third week of the immediately subsequent academic session. Deans are authorised to approve the extension of a MINC grade for individual students having a valid reason for their incomplete status.

INC

Incomplete. This result is used when examiners have grounds (such as illness or misadventure) for seeking further information or for considering additional work from the student before confirming the final result. Except in special cases approved by the Academic Board, this result will be converted to a normal permanent passing or failing grade either:

(a) by the Dean at the review of examination results conducted pursuant to section 2 (4) of the Academic Board policy 'Examinations and Assessment Procedures'; or

(b) automatically to an AF grade by the third week of the immediately subsequent academic session. Deans are authorised to approve the extension of a MINC grade for individual students having a valid reason for their incomplete status.

UCN

Incomplete. A MINC or INC grade is converted, on the advice of the Dean, to UCN when all or many students in a Unit of Study have not completed the requirements of the Unit. The students may be engaged in practicum or clinical placements, or in programs extending beyond the end of semester (eg, Honours).

Scholarships

Scholarships are financial or other forms of support made available by sponsors to assist Australian and international students to pursue their studies at the University. When a student's means are a criterion, scholarships are sometimes called bursaries.

{See also Prizes)

School

{See Department)

SCR

System Change Request.

Semester

A semester is the Academic Teaching period of approximately 14 weeks duration. All Units of Study have been semesterised, both at the undergraduate and postgraduate level, except for those components of final honours year or postgraduate courses relating to thesis or other similar research oriented projects for which two or more semesters are normally assigned for completion. Units of Study are taught and examined in either the first semester or the second semester (or in both semesters if the course is offered twice).

Semester Address

The Semester Address is the address to which all Official University correspondence is sent during semester time, if it is different to the Permanent Address. Unless overridden by a Temporary Address all Official University correspondence during Semester (including Session 4 for students enrolled in Summer School) will be sent to this address.

{See also Addresses, Business Address, Permanent Home Address, Temporary Address)

Senate

The Senate of the University is the governing body of the University.

{See the University Calendar)

Senate Appeals

Senate appeals are held for those students who, after being excluded by the Faculty from a course, appeal to the Senate for readmission. While any student may appeal to the Senate against an academic decision, such an appeal will normally be heard only after the student has exhausted all other avenues - ie, the Department, Faculty, Board of Study and, in the case of postgraduates, the Committee for Graduate Studies.

{See also Exclusion)

Session

A session is a defined teaching period of the University. The two major sessions are called semesters and are defined by the DETYA HECS Census date they contain (eg, first and second semester). The Academic Board must approve variation to the normal session pattern.

Session Address

{See Semester Address)

Special Consideration

Candidates who have medical or other serious problems, which may affect performance in any assessment, may request that they be given Special Consideration in relation to the determination of their results.

They can obtain an official form from the Student Centre. The Student Centre stamps the form and the medical or other documentation. The student gives a copy of the material to the Student Centre staff and takes copies to the relevant Departments. The student retains the originals. The dates for which Special Consideration is sought are recorded on FlexSIS and printed on the Examination Register.

Special Permission

{See Waiver)

Sponsorship

Sponsorship is the financial support of a student by a Company or Government body. Sponsors are frequently invoiced directly.

Stage

For the purposes of administration, a course may be divided into stages to be studied consecutively. The stages may be related to sessions or they may relate to an Academic Cycle. Part time students progress through a course more slowly and would often enrol in the same stage more than once.

Status

Status is a variable for students both with relation to Course and Unit of Study. With relation to Course, students can have the status of Enrolled or Not Enrolled. Not Enrolled reasons can be Totally Discontinued, Wididrawn, Suspended, Cancelled, Awarded, etc. With relation to Unit of Study, students can have the status of CURENR or WITHDN, Discontinued, etc.

Stream

A Stream is a defined program of study, selected from a table of Units of Study. Students enrolled in award courses that involve streams will have the stream recorded in their enrolment record. A student generally enters streams at the time of admission, although some award courses require students to enrol in streams after the completion of Level 1000. Students may transfer between Streams by altering their enrolment status within their Award Course, but only when permitted to do so by Faculty Resolution.

{See also Award Course, Major and Minor)

Student ID card

All students who enrol are issued with an identification card. The card includes the student name, SID, the course code, and a library borrower's bar code. The card identifies the student as eligible to attend classes and must be displayed at formal examinations. It must be presented to secure student concessions and to borrow books from all sections of the University Library.

Student Identifier (SID)

A nine-digit number which uniquely identifies a student at the University.

Student Load

{See Load)

Study Abroad Program

A scheme administered by the International Education Office which allows international students who are not part of an exchange program, to study UoSs at the University of Sydney, but not towards an award program. In most cases the UoSs studied here are credited towards an award at their home institution.

{See also Exchange Student)

SubjectArea
A Unit of Study may be associated with one or more Subject Areas. The Subject Area can be used to define Prerequisite and Course Rules - eg, the Unit of Study 'History of Momoyama and Edo Art' may count towards the requirements for the Subject Areas 'Art History and Theory' or, 'Asian Studies'.

Supervising Faculty
The Supervising Faculty is the Faculty which has the responsibility for managing the academic administration of a particular course ie, the interpretation and administration of course rules, approving students' enrolments and variations to enrolments. Normally the supervising Faculty is the Faculty offering the course. However, in the case of combined courses, one of the two Faculties involved will usually be designated the Supervising Faculty at any given time. Further, in the case where one course is jointly offered by two or more Faculties (eg, the Liberal Studies course) a Joint Committee may make academic decisions about candidature and the student may be assigned a Supervising Faculty for administration.

The International Office has a supporting role in the administration of the candidatures of international students and alerts the Supervising Faculty to any special conditions applying to these candidatures (eg, that enrolment must be full-time).

{See also Board of Studies)

Supervision
Supervision refers to a one to one relationship between a student and a nominated member of the academic staff or a person specifically appointed to the position.
(See also Advisor, Associate Supervisor, Instrumental Supervisor (teacher), Research Supervisor)

Supplementary Examination
(See Supplementary Exams)

Supplementary Exams
Supplementary exams may be offered by Faculties to students who fail to achieve a passing grade or who were absent from assessment due to illness or misadventure.

Suppression of Results
Results for a particular student can be suppressed by the University for the following reasons:
- the student has an outstanding debt to the University
- the student is facing disciplinary action.

Suspension
(See Course Leave)

Teaching Department
(See Department)

Temporary address
Students may advise the University of a Temporary Address. Correspondence will be sent to this address between the dates specified by the student.
(See also Addresses, Business Address, Permanent Home Address, Semester Address)

Testamur
A testamur is a certificate of award provided to a graduate usually at a graduation ceremony.

Thesis
A thesis is a major work that is the product of an extended period of supervised independent research.

'Earliest date' is the earliest date at which a research student can submit the thesis.

'Latest date' is the latest date at which a research student can submit the thesis.

Timetable
Timetable refers to the schedule of lectures, tutorials, laboratories and other academic activities that a student must attend.

Transcript
(See Academic Transcript)

Transfer
(See Course Transfer)

Tuition Fees
Tuition fees may be charged to students in designated tuition fee-paying courses. Students who pay fees are not liable for HECS.

UAC
The Universities Admissions Centre (UAC) receives and processes applications for admission to undergraduate courses at recognised universities in NSW and the ACT. Most commencing undergraduate students at the University apply through UAC.

UAC Admissions
Most local undergraduates (including local undergraduate fee payers) apply through the Universities Admission Centre (UAC).

The University Admissions Office coordinates the processing of UAC applicants with Faculties and Departments and decisions are recorded on the UAC system.
Applicants are notified by UAC and an electronic file of applicants who have been made offers of admission to courses at the University is loaded onto FlexSIS.
(See also Admission, Direct Admissions)

UAI (Universities Admission Index)
The Universities Admission Index (UAI) is a number between 0.00 and 100.00 with increments of 0.05. It provides a measure of overall academic achievement in the HSC that assists universities in ranking applicants for university selection. The UAI is based on the aggregate of scaled marks in ten units of the HSC.

Undergraduate
A term used to describe a course leading to a Diploma or Bachelor's Degree. An 'undergraduate' is a student enrolled in such a course.

Unit of Study (UoS)
A Unit of Study is the smallest stand-alone component of a student's course that is recordable on a student's transcript. UoSs have an integer credit point value, normally in the range 3-24. Each approved UoS is identified by a unique sequence of eight characters, consisting of a four character alphabetical code which usually identifies the Department or subject area, and a four character numeric code which identifies the particular UoS. Units of Study can be grouped by subject and level.
(See also Core Unit of Study, Course, Major)

Unit of Study Enrolment Status
The UoS Enrolment Status indicates whether the student is still actively attending the UoS (ie, currently enrolled) or is no longer enrolled (withdrawn or discontinued)

Unit of Study Group
A grouping of Units of Study within a course. The Units of Study which make up the groups are defined within FlexSIS.

Unit of Study Level
Units of Study are divided into Junior, Intermediate, Senior, Honours, 5th Year, and 6th Year. Most Majors consist of 32 Senior Credit Points in a subject area (either 3000 level Units of Study or a mix of 2000 and 3000 level Units of Study).

University
Unless otherwise indicated, University in this document refers to the University of Sydney.

University Medal
A Faculty may recommend the award of a University Medal to students qualified for the award of an undergraduate Honours degree or some Masters degrees, whose academic performance is judged outstanding.

UoS
(See Unit of Study)

UPA
University Postgraduate Award.

USYDnet
USYDnet is the University of Sydney's intranet system. In addition to the customised MyUni service, it provides access to other services such as Directories (Maps, Staff and Student, Organisations), a Calendar of Events (to which staff and students can submit entries), and a software download area.

Variation of Enrolment
{See Enrolment Variation)

Vice-Chancellor
The chief executive officer of the whole University, responsible for its leadership and management. He is head of both academic and administrative divisions.

Waiver
In a prescribed course, a Faculty may waive the Prerequisite or corequisite requirement for a Unit of Study or the course rules for a particular student. Waivers do not involve a reduction in the number of credit points required for a course.
{See also Credit)

Weighted Average Mark (WAM)
The Weighted Average Mark (WAM) is the average mark in the UoSs completed, weighted according to credit point value and level. The formulae used to calculate the WAMs are course-specific: there are many different WAMs in the University.

Year of First Enrolment (YFE)
The year in which a student first enrols at the University.

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