The University of Sydney

Faculty of Science Handbook 2006

University dates

University semester and vacation dates 2006

Summer School	
Lectures begin	Tuesday 3 January
Lectures end	Friday 3 March
Semester One	
Lectures begin	Monday 6 March
AVCC common week/non-teaching Easter period	Friday 14 April to Friday 21 April
Last day of lectures	Friday 9 June
Study vacation: one week beginning	Monday 12 June to Friday 16 June
Examination period	Monday 19 June to Saturday 1 July
Semester ends	Saturday 1 July
AVCC common week/non-teaching period	Monday 3 July to Friday 7 July
Semester Two	
Lectures begin	Monday 24 July
AVCC common week/non-teaching period	Monday 25 September to Friday 29 September
Last day of lectures	Friday 27 October
Study vacation	Monday 30 October to Friday 3 November
Examination period	Monday 6 November to Saturday 18 November
Semester ends	Saturday 18 November

Last dates for withdrawal or discontinuation 2006

Semester One units of study	
Last day to add a unit	Friday 17 March
Last day for withdrawal	Friday 31 March
Last day to discontinue without failure (DNF)	Friday 28 April
Last day to discontinue (Discontinued - Fail)	Friday 9 June
Semester Two units of study	
Last day to add a unit	Friday 4 August
Last day for withdrawal	Thursday 31 August
Last day to discontinue without failure (DNF)	Friday 8 September
Last day to discontinue (Discontinued - Fail)	Friday 27 October
Last day to withdraw from a non standard unit of study	By the census date of the non standard unit of study which must not be earlier than 20 per cent of the way through the period of time during which the unit is undertaken.

Details are in the session calendar on the timetabling website http://web.timetable.usyd.edu.au.

These dates (and any updates) are also available at:
www.usyd.edu.au/fstudent/undergrad/apply/scm/dates.shtml

The University of Sydney
NSW 2006
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Web: www.usyd.edu.au

Faculty of Science
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Email: facuity@science.usyd.edu.au

This book (and other handbooks) can also be found at:
www.usyd.edu.au/handbooks

The University of Sydney

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The information in this handbook is subject to approval and/or change by the appropriate faculty of the University. Students should always check the accuracy of the information with faculty staff.

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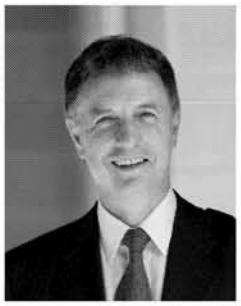
Contents

Faculty of Science Handbook

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

Message from the Dean



This is a particularly fascinating time to study science. Major technological advances are opening up many new areas, from ecosystems to nano-technology, and the boundaries between traditional areas are blurring as inter-disciplinary research leads to rapid progress on a wide range of issues in environmental, health and technology related industries that underpin the future prosperity and quality of life in Australia. These issues include: protection of biodiversity; environmental remediation; control of industrial pollution; energy production; new manufacturing technologies; genetically modified organisms; stem cells and other new genetic advances in health and medicine; data management and new computing developments; and understanding human behaviour. The comprehensive scope of the Faculty of Science at the University Sydney allows us to offer courses in all of these areas and the many joint degree options provide the opportunity to study social, moral and commercial consequences of science.

A degree in Science is a first step towards an exciting career, one that stimulates, challenges, and rewards you. It can take you from the microscopic to the cosmic level, into physical and biological processes and from order to chaos. A Science degree develops your investigative skills and teaches you the tools of critical analysis and communication - skills for lifelong learning. Employers in government, industry and education need graduates who are trained to think, analyse and communicate. Science graduates have a unique blend of generic and discipline-related skills that give them the capacity to tackle problems with initiative and resourcefulness, to plan and execute projects and to work as part of a team. Studying Science gives you the innovative skills for an ever-changing workforce environment and makes you a valuable and sought-after resource for employers. And if you become really excited by a particular area, our honours and postgraduate courses provide you with the training to become a practicing scientist in that field.

The degree programs at The University of Sydney are of exceptional quality. Many of our academic staff have won teaching awards and our research programs are world class. Our degree programs are designed to offer challenges and excitement at a range of different levels, including the Talented Students' Program, Advanced Science degree and specialist streams within the BSc that provide more directed science training, and in some cases, opportunities for industry placements. The Faculty has close links with industry and a wide range of employers, and will provide opportunities throughout your degree to explore career options. The degree programs have been designed so that you can specialise if you wish, but you don't have to make that decision until you have completed a general first year. The first year experience in Science is designed to help you settle into University, to meet other students, and to decide on or confirm your interest in a specialised area of study. We use a variety of teaching methods to help you develop sound generic computing skills, interpersonal and communication skills, and an ability to work in teams and groups. Most importantly, you will learn how to analyse problems, work out solutions, and communicate these clearly to others. We will help to discover how things function, develop lifelong strategies for learning new approaches, and gain skills to explore and use information in different contexts.

David Day
Dean

Introduction

This is the Faculty of Science handbook. In it you will find a store of information about things you need to know about the Faculty and the University. In particular, it will help you to find out who are the people in your Faculty, the requirements for degrees in the Faculty and the ways that these can be satisfied.

Chapter 1 is the "who and where" of the Faculty, names and locations of people and offices you are likely to need to contact during the year.

Chapter 2 contains enrolment advice for undergraduates as well as frequently asked questions and important policy affecting students in the Faculty. You will find enrolment guides and a degree planner to assist you to plan your degree. You should read this chapter in conjunction with chapters 3 and 5.

Chapter 3 contains degree tables and unit of study descriptions for undergraduates. If you want to know what a unit of study is and how it fits into your degree plan, this is the best place to look. You should read this chapter in conjunction with chapters 2 and 5.

Chapter 4 introduces the Faculty's Talented Student Program and gives contact details for coordinators in participating departments and schools.

In chapter 5 you will find the fine print, the undergraduate degree resolutions (rules) covering your degree. The information in this chapter takes precedence over all other information in chapters 2 and 3. You should definitely read the relevant parts of this chapter, and refer to them from time to time during your studies to make sure you are on track to satisfy the requirements of your degree.

Postgraduate students should look at the coloured pages, chapters 6 and 7, for enrolment information regarding their degrees. Chapter 6 contains enrolment advice and, for coursework students, unit of study information. Like chapter 5, chapter 7 contains the degree resolutions or rules, only for postgraduate degrees. You should make sure you read the resolutions pertaining to your degree. It will probably prove useful to read this in conjunction with the information in chapter 6.

Chapter 8 contains scholarships and prizes information for both undergraduate and postgraduate students.

In chapter 9 the staff of the Faculty are listed under their School or Department.
General University Information and the Glossary are handy reference pages for all sorts of services on campus or to explain that obscure term.

The Science Subject Area Index is a useful reference tool for students who know what they want to study, but don't know quite how it fits into the Faculty structure. Use it to help you locate the department or school that best serves your interests or needs.

University Dates

Please see the University Dates (http://www.usyd.edu.au/fstudent/undergrad/apply/scm/dates.shtml) page for a listing of all current semester, holiday and examination dates within the University of Sydney.

1. Contact information

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

Information in this section is accurate as at 17 December, 2004.

The Faculty of Science

Faculty & Student Information Office
Level 2
Carslaw Building F07
The University of Sydney
NSW 2006

Counter hours
Mon-Thur 10 am to 4 pm
Friday, 10 am to 1 pm
Phone:+61 2 9351 3021
Fax: +612 93514846
Email: faculty@science.usyd.edu.au
Web: www.science.usyd.edu.au (http://www.science.usyd.edu.au)

Bachelor degree program coordinators

Degree advisers	
BSc (Advanced Maths):	A/Prof Don Taylor
BSc (Bioinformatics):	Dr Lars Jermiin
BSc (Environmental):	Dr Craig Barnes
BSc (Marine Science):	Dr Craig Barnes, Dr Michael Hughes
BSc (Molecular Biology & Genetics):	Prof Iain Campbell
BSc (Molecular Biotechnology):	Dr Kevin Downard
BSc (Nutrition):	A/Prof Samir Samman
B Medical Science:	A/Prof Ian Spence
B Computer Science & Technology:	Dr Geoff Kennedy
B Information Technology:	Dr Irena Koprinska
B Psychology:	A/Prof Iain McGregor
B Liberal Studies:	Dr Margaret Charles
B Science Media & Communications:	A/Prof Christopher Gillies

Schools, departments, centres

Agriculture, Food & Natural Resources

Room 304, McMillan Building A05
Phone:+61 2 9351 6926
Fax: +612 93512945
Email: dean@agric.usyd.edu.au
Web: www.agric.usyd.edu.au/su/agric/
(http ://www. agric.usyd. edu. au/su/agric/)

Academic advisers	
Agricultural Chemistry	
Undergraduate:	Dr Robert Caldwell
Honours:	Prof Ivan Kennedy
Graduate:	Dr Robert Caldwell
Soil Science	
Intermediate year:	Dr Stephen Cattle
Senior :	Dr Balwant Singh
Honours:	Prof Alex McBratney
Graduate:	Dr Balwant Singh

Discipline of Anatomy and Histology

Room S463, Anderson Stuart Building F13
Phone:+61 2 9351 2497
Fax: +612 93512813
Email: enquiries@anatomy.usyd.edu.au
Web: www. anatomy.usyd. edu. au (http ://www. anatomy.usyd. edu. au)
Head of Department: Professor Bill Webster

Academic advisers	
Anatomy	
Undergraduate:	Dr Denise Donlon
Graduate:	Dr Frank Lovicu
Histology	
All years:	Prof Christopher R Murphy, A/Prof Maria Byrne

Biochemistry

see Molecular and Microbial Biosciences

Institute for Biomedical Research

Room S254, Anderson Stuart Building, F13
Phone:+61 2 9351 2841
Fax: +612 93512058
Email: ibr-gm@ibr.usyd.edu.au
Web: www.ibr.usyd.edu.au (http://www.ibr.usyd.edu.au)
Director: Professor Nick Hunt

Cell Pathology

see Pathology

School of Biological Sciences

Science Road Cottage, A10
Phone:+61 2 9351 2848
Fax: +612 93512558
Email: office@bio.usyd.edu.au
Web: www.bio.usyd.edu.au (http://www.bio.usyd.edu.au)
Head of School: Associate Professor Michael B Thompson

Academic advisers	
Junior year:	Dr Elizabeth May
Intermediate year:	A/Prof Ben Oldroyd
Senior year:	A/Prof Ben Oldroyd
Honours year:	DrAdelePile
Graduate adviser:	Prof Chris Dickman

Central Clinical School

Immunology Discipline
Blackburn Building D06
Phone:+61 2 9351 7308
Fax: +612 93513969
Email: hbriscoe@med.usyd.edu.au
Web: www.med.usyd.edu.au/medicine/immunology
(http ://www.med.usyd. edu. au/medicine/immunology)
Head of Discipline: Professor Warwick Britton

Academic adviser	
All years:	A/Prof Helen Briscoe

Infectious Diseases Discipline
Room 676, Blackburn Building D06
Phone:+61 2 9351 2412
Fax: +612 93514731
Email: charbour@infdis.usyd.edu.au
Web: www.usyd. edu. au/su/infdis (http ://www.usyd. edu. au/su/infdis)
Head of Discipline: Associate Professor Colin Harbour

Academic adviser	
All years:	A/Prof Colin Harbour

School of Chemistry

School of Chemistry Fl 1
Phone:+61 2 9351 4504
Fax: +612 93513329
Email: enquiries@chem.usyd.edu.au
Web: www.chem.usyd.edu.au (http://www.chem.usyd.edu.au)
Head of School: Professor Trevor Hambley

Academic advisers	
Junior year:	Dr Adrian George
Intermediate year:	Dr Ron Clarke
Senior year:	Dr Rob Baker
Honours year:	A/Prof Cameron Kepert
Graduate adviser:	Dr Mark Coster

Computational Science

see Physics

Computer Science

see Information Technologies

Centre for Research on Ecological Impacts of Coastal Cities

Old Geology Building, Al 1
Phone:+61 2 9351 4835
Fax: +612 93516713
Email: eicc@bio.usyd.edu.au
Web: www.eicc.bio.usyd.edu.au (http://www.eicc.bio.usyd.edu.au)
Director: Professor Antony J Underwood

Academic adviser	
Graduate:	Prof Antony Underwood

Environmental Science

Admin: Room 470, Madsen Building F09
Phone:+61 2 9351 2972
Fax: +612 93513644
Email: craigb@mail.usyd.edu.au
Web: http://www.usyd. edu. au/envsci/
(http ://www.usyd. edu. au/envsci/)
Director: Dr Gavin Birch

Academic advisers	
Undergraduate:	Dr Craig Barnes
Graduate:	Dr Craig Barnes

Fruit Fly Research Centre

Botany Building A12
Phone:+61 2 9351 2541
Fax: +612 93517504
Email: mrobson@bio.usyd.edu.au
Web: www.bio.usyd.edu.au/fruitfly/index.htm
(http://www.bio.usyd.edu.au/fruitfly/index.htm)
Chair: Associate Professor Christopher B Gillies

School of Geosciences

Geology and Geophysics: Edgeworth David Building, F05
Geography: Room 469, Madsen Building, F09
Phone:+61 2 9351 2886
Fax: +612 93513644
Email: c.thornley@geosci.usyd.edu.au
Web: www.geosci.usyd.edu.au/ (http://www.geosci.usyd.edu.au/)
Head of School: Dr Geoffrey Clarke

Academic advisers	
Geography	
Junior year:	Dr Melissa R. Neave
Intermediate year:	A/Prof Phil Hirsch
Senior year:	Dr Stephen Gale
Honours year:	Dr Phil McManus
Graduate adviser:	A/Prof Deirdre Dragovich
Geology and Geophysics	
Junior year:	Mr Tom Hubble
Intermediate year:	Dr Patrice Rey
Intermediate year Environmental Geology:	Dr Gavin Birch
Senior year:	Dr Michael Hughes
Honours year:	Dr Derek Wyman
Graduate adviser:	Dr Derek Wyman

History and Philosophy of Science Unit

Room 441, Carslaw Building F07
Phone:+61 2 9351 4226
Fax: +612 93514124
Email: hps@science.usyd.edu.au
Web: www.usyd.edu.au/hps/ (http://www.usyd.edu.au/hps/)
Director: Dr Hans Pols

Academic advisers	
Undergraduate:	Dr Ofer Gal
Honours:	Dr Michael Selgelid
Graduate:	Dr Rachel Ankeny

Immunology

see Central Clinical School

Infectious Diseases

see Central Clinical School

School of Information Technologies

Room G71, Madsen Building F09
Phone:+61 2 9351 3423
Fax: +612 93513838
Email: admin@it.usyd.edu.au
Web: www.it.usyd.edu.au
Head of School: To be advised

Academic advisers	
Undergraduate:	Dr Geoffrey Kennedy
Junior Year:	Mr Simon Poon
Intermediate Year:	Dr Kalina Yacef
Senior Year:	Dr Vera Chung
Honours year:	Dr Bernhard Scholz
Graduate (coursework):	Dr Jon Gray
Graduate (research):	Dr Sanjay Chawla

University of Sydney Institute of Marine Science

Rm 211 Edgeworth David Building F05
Admin: Room 470, Madsen Building F09
Phone:+61 2 9351 2972
Fax: +612 93513644
Email: craigb@mail.usyd.edu.au
Web: www.usyd. edu. au/marine (http ://www.usyd. edu. au/marine)
Director: Associate Professor Dietmar Mtiller

Academic advisers:	
Undergraduate:	Dr Craig Barnes Dr Michael Hughes Dr Adele Pile
Graduate:	Dr Craig Barnes Prof Antony Underwood

School of Mathematics and Statistics
Carslaw Building F07
Phone:+61 2 93514533
Fax: +612 93514534
Email: firstyear@maths.usyd.edu.au, enq@maths.usyd.edu.au, statenq@maths.usyd.edu.au, pg-director@maths.usyd.edu.au
Web: www.maths.usyd.edu.au (http://www.maths.usyd.edu.au)
Head of School: Associate Professor Don Taylor

Academic advisers	
Junior year:	First-year Office; Ms Sandra Britton
Intermediate year Applied Mathematics: Mathematical Statistics: Pure Mathematics:	Dr David Ivers Dr Qiying Wang Dr Bill Palmer
Senior year Applied Mathematics: Mathematical Statistics: Pure Mathematics:	Dr Chris Cosgrove Dr Shelton Peiris Dr Adrian Nelson
Honours year Applied Mathematics: Mathematical Statistics: Pure Mathematics:	Dr Sanjeeva Balasuriya A/Prof Malcolm Quine Dr Laurentiu Paunescu
Graduate adviser:	Dr David Easdown & Dr Andrew Mathas

Microbiology
See Molecular and Microbial Biosciences

Australian Key Centre for Microscopy and Microanalysis
Room LG21, Madsen Building F09
Phone:+61 2 9351 2351
Fax: +612 93517682
Email: kcentre@emu.usyd.edu.au
Web: www.emu.usyd. edu. au (http://www. emu.usyd. edu.au)
Director: Professor Simon Ringer

Academic adviser	
Graduate:	DrVickiKeast

School of Molecular and Microbial Biosciences
Email: studentsupport@mmb.usyd.edu.au
Web: www.mmb.usyd.edu.au (http://www.mmb.usyd.edu.au)
Head of School: Professor Ian Caterson

Biochemistry Discipline
Room 435, Biochemistry/Microbiology Building G08
Phone:+61 2 9036 5417/5416
Fax: +612 93515858
Email: hod.biochem@mmb.usyd.edu.au
Head of Discipline: Professor Iain Campbell

Microbiology Discipline
Room 435, Biochemistry/Microbiology Building G08
Phone:+61 2 9036 5417/5416
Fax: +612 93514571
Email: hod.micro@mmb.usyd.edu.au
Head of Discipline: Dr Dee Carter

Human Nutrition unit
Room 435, Biochemistry/Microbiology Building G08
Phone:+61 2 9351 3757
Fax: +612 93515858
Email: hod.hnu@mmb.usyd.edu.au
Head of Discipline: Associate Professor Samir Samman

Molecular Biotechnology
Room 473, Biochemistry/Microbiology Building G08
Phone:+61 2 9351 8680
Fax: +612 93516022
Email: enquiries@biotech.usyd.edu.au
Head of Discipline: Dr Kevin Downard

Academic advisers	
Graduate adviser:	A/Prof Alan Jones
Biochemistry	
Intermediate year Biochemistry	A/Prof Gareth Denyer Dr Charles Collyer
Junior and Intermediate year Molecular Biology & Genetics:	Dr Dale Hancock Dr Hannah Nicholas
Medical Science:	Prof Richard Christopherson
Senior year:	Mrs Jill Johnston
Honours year:	Dr Simon Easterbrook-Smith
Human Nutrition	
Intermediate year:	Dr Kim Bell-Anderson
Senior year:	Ms Soumela Amanatidis
Honours year and Postgraduate:	A/Prof Samir Samman
Microbiology	
Intermediate year:	Dr Andrew Holmes
Senior year:	Mrs Helen Agus Dr Dee Carter
Honours year and Postgraduate:	Dr Tom Ferenci
Medical Science:	Mrs Helen Agus
Molecular Biotechnology	
Intermediate year:	Dr Rachel Codd
Senior year:	Dr Neville Firth
Graduate adviser:	Dr Kevin Downard

Nutrition
See School of Molecular & Microbial Sciences

Discipline of Pathology
Room 501, Blackburn Building D06
Phone: +61 2 9351 2414/2600
Fax: +612 93513429
Email: fi@pathology.usyd.edu.au
Web: www.med.usyd.edu.au/path/
(http ://www.med.usyd. edu. au/path/)
Head of Department: Professor Nicholas H Hunt

Academic advisers	
Undergraduate:	Prof Nicholas Hunt A/Prof Nicholas King
Graduate:	Dr John Gibbins

Discipline of Pharmacology
Room 215, Blackburn Building D06
Phone:+61 2 9351 2408
Fax: +612 93513868
Email: nimmir@pharmacol.usyd.edu.au
Web: www.usyd. edu. au/su/pharmacology/
(http ://www.usyd. edu. au/su/pharmacology/)
Head of Department: Associate Professor Ian Spence

Academic advisers	
Pharmacology	
Intermediate year:	See Unit of Study descriptions for individual Unit of Study coordinators
Senior year:	See Unit of Study descriptions for individual Unit of Study coordinators
Honours year:	Dr Jasmine Henderson
Graduate adviser:	A/Prof Robert Vandenberg

School of Physics

Room 202, School of Physics A28
Phone:+61 2 9351 3037
Fax: +612 93517726
Email: student_support@physics.usyd.edu.au
Web: www.physics.usyd.edu.au (http://www.physics.usyd.edu.au)
Head of School: Associate Professor Brian James

Academic advisers	
Junior year:	Dr John 0'Byrne
Intermediate year:	Dr Gordon Robertson
Senior year:	A/Prof Tim Bedding
Honours year:	A/Prof Anne Green
Graduate adviser:	Dr Geraint Lewis
Computational Science:	Dr Mike Wheatland

Discipline of Physiology

Room E212, Anderson Stuart Building F13
Phone:+61 2 9351 3478
Fax: +612 93518400
Email: liaison@physiol.usyd.edu.au
Web: www.physiol.usyd.edu.au (http://www.physiol.usyd.edu.au)
Head of Department: Associate Professor Rebecca Mason

Academic advisers	
Intermediate year:	Dr Miriam Frommer Dr Meloni Muir
Medical Science:	Mrs Francoise Janod-Groves
Senior year:	Prof Roger Dampney Dr Bill Phillips Mrs Irene Schneider Dr Cathy Leamey Dr Dario Protti
Honours year:	Prof David Allen
Graduate adviser:	Prof Max Bennett

Key Centre for Polymer Colloids

Phone:+61 2 9351 6968
Fax: +612 93518651
Email: gilbert@chem.usyd.edu.au
Web: www.kcpc.usyd.edu.au (http://www.kcpc.usyd.edu.au)
Director: Professor Robert G Gilbert

School of Psychology

Room 325, Mungo MacCallum Building A18
Phone:+61 2 9351 2872
Fax: +61 2 9036 5223
Email: enquiries@psych.usyd.edu.au
Web: www.psych.usyd.edu.au (http://www.psych.usyd.edu.au)
Head of School: Professor Sally Andrews

Academic advisers	
Junior year:	Dr Caleb Owens
Intermediate year:	Dr Michael Walker
Senior year:	Dr Michael Walker
Honours year:	Dr Damian Birney
GradDipSc(Psych): Doctor of Clinical Psych: Doctor of Clin Neuropsych: Applied Science (Coaching):	Dr Elizabeth Rieger Dr Caroline Hunt Dr Diana Caine Dr Anthony Grant
Graduate adviser:	Dr Justin Harris

2. Undergraduate enrolment advice and policies

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

This chapter is intended to give enrolment advice to undergraduate students in the Faculty of Science. You will find answers to frequently asked questions covering all students. Following this are specific summaries of the requirements for each degree including examples of how unit of study choices can be made over the duration of the degree. With some degrees there is information on recommended combinations of units of study, especially in first year, to help guide you to your goals.

It should be stressed that the information in this chapter is intended to be a rough guide only. All students will have to decide for themselves how to plan their degree to suit their own particular interests and situation.

All students are expected to read the degree resolutions for their course before they commence their studies, and from time to time during their studies. Undergraduate degree resolutions appear in chapter 5. The tables of undergraduate units of study available for each degree and unit descriptions appear in chapter 3.

Students enrolled in units of study offered by the Faculty of Science are required to familiarise themselves with the following four key policies:

Special Arrangements

Students who are experiencing difficulty in meeting their assessment requirements due to competing essential community commitments may apply for Special Arrangements for examination and assessment.

Special Consideration

Students who have a serious illness or who have experienced misadventure which may affect their academic performance in a course or unit of study may request that they be given Special Consideration in relation to the determination of their results.

Code of Conduct for Students

The University has clear expectations of students in respect of academic matters and personal behaviour.

Student Plagiarism: Coursework Policy and Procedure

The University of Sydney expects high standards of academic honesty in all student work. In particular, the University is opposed to and will not tolerate plagiarism.

Details on Special Arrangements, Special Consideration, Code of Conduct for Students, and Student Plagiarism Policy are provided elsewhere in this handbook.

Inside the back cover of this handbook you will find a planner to assist you to map out your degree. It is recommended that you plan your studies carefully with an eye to your final years, so that you take the correct prerequisites in the preceding years. It will be useful to revisit this planner during your studies as your interests take more detailed shape.

Enrolment day FAQs

What is a "major"?
Some degrees in the Faculty of Science require you to complete a major. A major is a specialisation in the Senior year of your degree. It is useful to have an idea of what major, or group of majors, interest you now, so that you can plan your Junior and Intermediate years properly. The Bachelor of Science majors Neuroscience, and Nanoscience and Technology require earlier planning than most others. If you are interested in these then read Table I (Bachelor of Science: Chapter 3) carefully and/or seek advice.

A major is usually defined as 24 credit points of study at the Senior level in a single Science Area. Neuroscience and Psychology both have additional requirements. Depending on the majors chosen, it is possible to complete more than one major in your degree.

Degrees where you choose a major are the Bachelor of Science (including the Advanced stream of the BSc), Bachelor of Computer Science and Technology (including the Advanced stream of the BCST), Bachelor of Information Technology and the Bachelor of Liberal Studies (including both the Advanced and International streams of the BLibStud).

How many credit points should I take per semester?
You should take 24 credit points each semester if you are a full-time student. There is an upper limit of 30 credit points per semester. If you take fewer than 18 credit points in each semester you will automatically become part-time.

To finish your degree in the recommended minimum time you will have to take 48 credit points per year, or 24 per semester. If you enrol part time you can take as few credit points as you like. You must keep in mind however that you have a 10 year limit to finish your degree. Students wishing to accelerate their degree programs may consider undertaking units offered at Summer School or undertaking up to 30 credit points each semester. The degree summaries and sample programs in this chapter assume you will enrol full-time.

Do I need to be full-time?
If you receive any financial support, whether from a University scholarship or from the government, you may well need to enrol as a full-time student. You should check carefully the terms and conditions of that support before going part-time.

Australian citizens and permanent residents who wish to receive a transport concession card must be full-time students.

International students are required to be full-time.

Can I take units of study from other faculties?
Yes - generally you can take any unit of study offered by the Faculty of Arts and the Faculty of Economics. Lists of available units of study will be available on enrolment day, or in each faculty's handbook. Each Faculty website has links to Departmental and unit of study information.

Also available are undergraduate units from any other faculty at the university. The onus is on you to get written permission from the relevant department and bring it to the Faculty of Science.

There are limits, and exclusions. You should refer to the degree summary sections of this chapter for specific information about your particular degree.

The Bachelor of Science allows for up to 48 credit points of Non-Science units of study to be included in the 3 year program. Junior Econometrics (ECMT units) and General Statistical Methods (STAT units) are specifically excluded from the BSc. Students in specialist programs and combined degrees may have less flexibility.

Can I get credit for previous tertiary study?
Yes. The amount of credit you can receive depends on your individual circumstances, but in general is capped at 48 credit points for a degree already completed or 96 credit points for an incomplete degree.

If you apply for credit before enrolment day and receive a letter in return specifying the credit awarded you can make your unit of study choices with this information in mind on enrolment day itself. You should bring this letter with you.

If you do not apply for credit before enrolment day you will have to make unit of study choices as if you have had no previous university study. You should then apply that day for your credit request to be processed. Because of the large numbers of applications received at enrolment there can be a considerable delay in processing your application. It is in your best interests to apply in the year preceding your planned enrolment.

The Faculty must sight originals of your academic transcripts, as well as unit of study descriptions clearly indicating credit point value or hours per week, and length of units you want credited. You may only apply for credit ONCE in your degree.

Information on the current process to apply for credit, including the application form, is available from the Faculty of Science website.

Are there any bridging courses available?
There are bridging courses in Biology, Chemistry, Mathematics and Physics, designed to cover the assumed knowledge that students would normally cover in the HSC. They run in February each year after enrolment and are recommended for students who either didn't take a subject at the HSC or feel they need some revision.

Who can enrol in Advanced units of study?
Advanced units of study are available to those students enrolled in any program in the Faculty of Science who have performed at a high level in science subjects in the HSC or who perform well in their studies at the University.

Consult a departmental adviser about your eligibility to enrol in Advanced level subjects in the first year of study. You must obtain special permission to enrol in any Advanced unit of study except Software. For Software Advanced units of study, you must meet the criteria listed on the permission form for Advanced units of study. The departmental advisers have copies of the permission form for Advanced units of study.

Students should also consult the unit of study Tables for assumed and prerequisite marks in the HSC required to enrol in Advanced units of study.

For students in an Advanced degree it is recommended that you enrol in no more than 24 credit points of Advanced units of study in a year. Advanced units of study are very demanding and students are required to perform at a higher standard than in the normal units of study.

What is the Talented Student Program ?
The Talented Student Program (TSP) is unique to the University of Sydney. It is tailored to meet students' individual needs and is restricted to the very top students.

Students may be able to bypass some first year study and enrol directly in a second year course. If you have outstanding results in any of your HSC science subjects you may wish to negotiate a special program of study with one of the departments in the Faculty of Science.

The Talented Student Program is available in most areas of Science. Students receive special supervision by academic staff and often engage in studies on an individual basis with small numbers of fellow students, all of whom have a special interest in the same subject.

Am I eligible for the Talented Student Program?
Entry to the TSP is by invitation from the Dean which you should have received by the time you enrol. The following guidelines apply generally, although Departments may have additional (and sometimes more stringent) requirements for entry into the program. To get into the program in your first year, you should normally have a UAI (or equivalent) of at least 99.00 and a result in band 6 in at least one HSC Science subject area and/or a mark of 95 or better in HSC Mathematics Extension 2. For entry into the program in your second and third years, you should normally have a weighted average mark of 85 or over and a high distinction grade in the relevant subject area.

Bachelor of Science (BSc)

Degree Code: LH000

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Enrolment guide

In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics; and
- 12 credit points of elective units of study from Science, Arts, Economics, Engineering or other faculties.

To complete your degree you must gain credit for at least 144 credit points. The 144 credit points required for the degree must include:

- at least 96 credit points from Science subject areas;
- at least one major from those included in Table I (see Table I: Bachelor of Science: chapter 3);
- at least 12 credit points from the Science subject areas of Mathematics and Statistics;
- at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics;
- no more than 60 credit points from Junior units of study;
- all students, notwithstanding any credit transfer, must complete at least 24 credit points of Senior Science units of study towards a major taken at The University of Sydney. A major in the BSc normally requires the completion of 24 credit points of Senior units of study in one Science area, including any units of study specified in the table of undergraduate units of study as compulsory for that major.

You should also note the following:

- a student may not count a unit of study toward more than one major;
- a maximum of 48 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculty of Science;
- units of study completed at the University of Sydney Summer School which correspond to units of study permitted to count to this degree may be credited towards the course requirements;
- a standard full time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part time;
- you may not enrol in more than 30 credit points in any one semester without permission;
- before being admitted to enrol in a unit of study, you have to meet any prerequisites and corequisites for that unit of study;
- Advanced units of study are indicated by a 9 (or 8) as the second digit of the unit of study code, and usually have higher entry requirements than the equivalent normal units;
- once the award course requirements of 144 credit points have been satisfied a student may not enrol in additional units of study without first obtaining the permission of the Dean; and
- if a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below as well as information about each major and recommended first year combinations of units of study. There is also a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables. You may also wish to refer to the handbooks of other faculties as the degree resolutions allow.

Honours

There will be Honours courses in all Science subject areas. Please refer to "Honours in the Faculty of Science" in this chapter, and to Table VI: Honours units of study in chapter 3.

Sample Bachelor of Science

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	Elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	Elective		
		3	3	6	6	6		24
Year 2	1	Major 1 Intermediate 2XXX	Major 2 Intermediate or Science elective	Science elective	Elective			
		6	6	6	6			24
	2	Major 1 Intermediate 2XXX	Major 2 Intermediate or Science elective	Elective	Elective			
		6	6	6	6			24
Year 3	1	Major 1 3XXX	Major 1 3XXX	Major 2 or elective	Major 2 or elective			
		6	6	6	6			24
	2	Major 1 3XXX	Major 1 3XXX	Major 2 or elective	Major 2 or elective			
		6	6	6	6			24
							Total credit points:	144

Require: 144cp total, one major, min. 96cp Science, min 36cp Junior Science incl. 12cp Maths, max. 60cp Junior.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring into the BSc

Students may transfer into the BSc from any of the streams within the BSc, with the permission of Dean.

Universities Admissions Index (UAI)

The minimum UAI for admission to the course varies from year to year.

Degree resolutions

See Chapter 5.

Enrolment guide by major

The following is a list of recommended combinations of Junior units of study if you are intending to complete a major in a particular Science Subject Area. Students should also consult Table I (Bachelor of Science: Chapter 3) and school/department advisers for further information on major requirements.

Agricultural Chemistry

Major not offered at the Advanced level.

12 credit points of Junior units of study in each of Biology + Chemistry + Mathematics +12 credit points from one of Physics, Geology or Geography.

Anatomy and Histology

Major not offered at the Advanced level.

12 credit points of Junior units of study in either Biology or Psychology + 12 credit points of Mathematics + 24 credit points from Junior Chemistry, or Junior Physics, Mathematics or from units of study selected in consultation with an adviser.

Biochemistry

Major offered at the Advanced level.

6 credit points of Junior units of study in each of Biology and Molecular Biology and Genetics (MBLG1001) +12 credit points of Junior Chemistry + Mathematics +12 credit points from units of study from other areas.

Biology

Major offered at the Advanced level.

Planning for a Biology major
12 credit points of Junior Biology are needed to enrol in Intermediate units of study in Biology. Students intending to major in Biology should take at least 16 credit points of Intermediate Biology. The Biology major is also offered at the Advanced level.

Recommended Junior combinations for a Biology major
BIOL (1001 or 1101 or 1901) + BIOL (1002 or 1902) + 12 credit points of Junior units of study in Chemistry + Mathematics +12 credit points from units of study selected in consultation with an adviser.

Junior Biology Information
BIOL 1001 - Concepts in Biology is an introductory unit recommended for students who have not studied HSC biology.
BIOL 1101 - Biology - Ecosystems to Genes is recommended for students who have HSC biology.
BIOL 1002 - Living Systems is suitable for students who want to go onto plant, animal or molecular biology.
BIOL 1003 - Human Biology is suitable for students who specifically want to go onto human related units of study.

Assumed knowledge
A biology bridging course is recommended for students who have not studied HSC biology.

Advanced Biology
If you have a UAI of at least 93 and an HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit you are eligible to enrol in Advanced units of study in Junior Biology. It is not necessary to enrol in both semester 1 and semester 2 Advanced units of study.

Related Junior subject areas
It is recommended that you take 12 Junior credit points of Chemistry, preferably CHEM 1101 and CHEM 1102, or their equivalent, if you intend to proceed into any Intermediate year Biology, Biochemistry or Molecular Biology and Genetics units of study.

Cell Pathology

Major not offered at the Advanced level.

12 credit points of Junior units of study in each of Chemistry + Physics + Mathematics + Biology 1001 or 1101 or 1901 + Biology 1002 or 1003 or 1902 or 1903.

Chemistry

Major offered at Advanced level.

Planning for a Chemistry major
12 credit points of Junior Chemistry are needed to enrol in Intermediate units of study in Chemistry. Students intending to major in Chemistry should enrol in CHEM2401 and CHEM2402. Enrolment in CHEM2403 and/or CHEM2404 is also strongly recommended. The Chemistry major is also offered at the Advanced level.

Recommended Junior combinations for a Chemistry major
12 credit points of Junior units of study in each of Chemistry + Mathematics + 24 credit points from other areas of study selected in consultation with an adviser.

Junior Chemistry Information
CHEM 1001 and 1002 are recommended for students whose Chemistry background is weak or non-existent. It is recommended that such students also take the Chemistry Bridging Course.
CHEM 1101 and 1102 are recommended for students who have HSC Chemistry. Students intending to enrol in Intermediate and Senior Chemistry should take this level or higher.

Assumed knowledge
HSC Chemistry is assumed knowledge for all Chemistry 1 courses except CHEM1001 and CHEM1002. Students without HSC Chemistry, who plan to enrol in Intermediate Chemistry, should discuss their options with the Director of First Year Studies in Chemistry.

Advanced Chemistry and Special Studies
If you have a UAI of at least 96.4 and an HSC Chemistry result in the 80th percentile or better, you are eligible to choose Advanced Chemistry units. The Special Studies Program is designed for the truly exceptional Chemistry student and entry is by invitation only. The minimum requirement for entry to CHEM 1903 is a UAI of 98.7 and an HSC Chemistry result in the 90th percentile or better.

Computational Science

Major offered at the Advanced level.

Planning for a Computational Science major
Computational Science is an interdisciplinary major comprising core and elective units of study at the Senior level offered by several Schools and Departments in the Faculty of Science (see Table I). In addition, a variety of Junior and Intermediate units of study offered across the Faculty provide a solid basis for Senior studies and sufficient knowledge to apply Computational Science in specific areas of science. The Computational Science major is also offered at the Advanced level.

Recommended Junior combinations for a Computational Science major
COSC 1001 + COSC 1002 + SOFT 1001 + SOFT 1002 + 12 credit points of Junior Mathematics +18 credit points selected in consultation with an adviser.

Junior Computational Science information
Junior COSC units of study are useful for later studies in computational science, but are not prerequisites.

Advanced Computational Science
Junior COSC units of study are also offered at the Advanced level. To enrol in COSC 1901 (Advanced) or COSC 1902 (Advanced) you must have a UAI of 90 or more, or have a Distinction or better in another Junior COSC or SOFT unit.

Assumed knowledge
See individual units for entry requirements.

Computer Science

Major offered at the Advanced level.

SOFT 1001 + SOFT 1002 + MATH 1001 + MATH 1002 + MATH 1005 + (MATH 1003 or MATH 1004) + 24 credit points of other Junior units of study. (Each of the above units of study can be replaced by the corresponding Advanced unit of study).

Financial Mathematics and Statistics

Major offered at the Advanced level.

MATH 1001 + MATH 1002 + MATH 1003 + MATH 1005 + 24 credit points of other Junior units of study. Each of the above units of study may be replaced by the corresponding Advanced unit of study.

Environmental Studies

Major not offered at the Advanced level.

Recommended Junior combinations for an Environmental Studies major
12 credit points of Mathematics + at least two of the following units of study: GEOG1001, GEOG1002, GEOL1001, GEOL1002 + other elective units to a total of 48 junior credit points.

Geography

Major offered at the Advanced level.

12 credit points of Junior units of study in each of Geography + Mathematics + either Geology or Biology 1001 or 1101 or 1901 or 1002 or 1902 + either Chemistry or Physics.

Geology & Geophysics

Major offered at the Advanced level.

12 credit points of Junior units of study in each of Geology + Mathematics + Physics and/or Chemistry. Physics/Chemistry and other units may be selected in consultation with an adviser.

History and Philosophy of Science

Major not offered at the Advanced level.

Planning for a major in History and Philosophy of Science
24 credit points of Junior study are needed to enrol in Intermediate units of study in the History and Philosophy of Science. Students intending to major in History and Philosophy of Science must take 6 credit points of Intermediate History and Philosophy of Science. We strongly encourage pursuit of a double major in History and Philosophy of Science and another area of Science, with completion of the appropriate Junior units of study for that major.

Recommended Junior combinations
12 credit points of Junior units of study in Mathematics and Statistics; 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics; and 12 credit points of elective units of study from History, Philosophy, Gender Studies, Physics, Psychology, or other related areas of study in arts or science in consultation with an History and Philosophy of Science adviser about appropriate combinations of electives to help prepare for an History and Philosophy of Science major.

Related Junior subject areas
Students interested in related topics should consider taking the unit Concepts and Issues in Physical Science (PHYS 1600) which serves as useful background for further studies in History and Philosophy of Science and counts as an Arts elective

Immunobiology

Major not offered at the Advanced level.

Immunology is offered at Intermediate and Senior levels. 24 credit points of Junior units of study from any of the science discipline areas is required for Intermediate study in Immunology. We recommend these include: BIOL 1001 or 1101 or 1901 and BIOL 1002 or 1902 or 1003 or 1903 and MATH 1015 or MATH 1005 or 1905 and CHEM 1001 and 1002 or CHEM 1101 /1901 and 1102/1902. For the Immunobiology major the minimum requirement is 12 credit points of Senior Immunology and 12 credit points from the elective Senior units of study listed in Table I. Intermediate studies must include Introductory Immunology, IMMU 2101. MBLG 2001/2901 is highly recommended and students should note the prerequisites for each elective to determine their choice of concurrent Intermediate study units.

Information Systems

Major not offered at the Advanced level.

ISYS 1003 + 6 credit points of a language unit (ENGL 1005 or LNGS [1001 or 1002 or 1005]) +12 credit points of Junior Mathematics units of study + 24 credit points selected in consultation with an adviser.

Marine Science

BIOL 1001 or 1101 or 1901 + BIOL 1002 or 1902+ 12 credit points of Junior units of study in each of Geosciences + Mathematics + Chemistry or Physics + Mathematics.

Mathematics

Major offered at the Advanced level.

Planning for a Mathematics major
12 credit points of Junior Mathematics are generally needed to enrol in Intermediate units of study in Mathematics. Students intending to major in Mathematics should take at least 12 credit points of Intermediate Mathematics. The Mathematics major is also offered at the Advanced level.

Recommended Junior combinations for a Mathematics major
MATH 1001/1901/1906 + MATH 1002/1902 + MATH 1003/1903/1907 + MATH (1004/1904 or 1005/1905) + 36 other Junior credit points.

Junior Mathematics information
If you have HSC Mathematics: MATH 1011, 1013, 1014 and 1015. Note that no progression to later year Mathematics is possible, except in very special circumstances.

If you have HSC Mathematics Extension 1: MATH 1001, 1002 and two from MATH 1003, 1004 or 1005 (all Normal).

Advanced Mathematics and Special Studies
If you have HSC Mathematics Extension 2, you are eligible to choose MATH 1901, 1902, 1903 or 1904.

If you have HSC Mathematics Extension 2, or a result in Band E2 or better of HSC Mathematics Extension 1 you are eligible to choose MATH 1905.

If you have a UAI of at least 98.5 and a result in Band E4 of HSC Mathematics Extension 2 you are eligible to apply for: MATH 1906 - Mathematics (Special Studies Program) A.

Assumed knowledge
Bridging courses in mathematics are recommended for students who do not have the assumed knowledge for their selected level of Mathematics study.

Mathematics in other majors
Statistics majors: must include MATH 1015/1005/1905 and MATH 1003/1903.
Computer Science majors: Should include MATH 1005/1905.
Biological and other Life Science majors: should include MATH 1015/1005/1905.

Medicinal Chemistry

Major offered at the Advanced level.

12 credit points of Junior units of study in each of Chemistry + Physics + Mathematics + BIOL 1001 or 1101 or 1901 + BIOL 1002 or 1003 or 1902 or 1903.

Microbiology

Major offered at the Advanced level.

6 credit points of Junior units of study in each of Biology and Molecular Biology and Genetics (MBLG1001) +12 credit points of Junior Chemistry + Mathematics +12 credit points from units of study from other areas.

Nanoscience and Technology

Major offered at the Advanced level.

Physics, Chemistry and Mathematics (including MATHl001/1901 + MATH1002/1902 + MATHl 003/1903) + 12 credit points of other Junior units of study selected in consultation with an adviser.

Neuroscience

Major possible at the Advanced level.

12 credit points of Junior Mathematics + 24 credit points from Biology, Chemistry, Computer Science, Physics or Psychology +12 credit points chosen in consultation with an adviser.

Pharmacology

Major offered at the Advanced level.

12 credit points of Junior units of study in each of Chemistry + Physics + Mathematics + BIOL 1001 or 1101 or 1901 + BIOL 1002 or 1003 or 1902 or 1903.

Physics

Major not offered at the Advanced level.

Planning for a Physics major
12 credit points of Junior Physics are needed to enrol in Intermediate units of study in Physics. 6 credit points of Intermediate Physics in semester 1 completes a "first pass" through Physics begun in Junior Physics. Students intending to major in Physics should take at least 12 credit points of Intermediate Physics. The Physics major is also offered at the Advanced level.

Recommended Junior combinations for a Physics major
12 credit points of Junior units of study in each of Physics + Mathematics (MATH 1001/1901 + MATH 1002/1902 + MATH 1003/1903 + MATH 1004/1904 or 1005/1905)+ 24 credit points of other Junior units of study selected in consultation with an adviser.

Junior Physics information
Your choice of units in Junior Physics in semester 1 is governed by your Physics experience at school.

PHYS 1001 (Regular) is for those who scored 65 or more in HSC Physics (or equivalent).
PHYS 1002 (Fundamentals) is primarily for those who have not studied physics before, or who scored less than 65 in HSC Physics.

In semester 2 your choice should be determined by your interests and the direction of your future studies.

Students from any semester 1 option may move into either PHYS 1003 (Technological) or PHYS 1004 (Environmental & Life Science). PHYS 1003 (Technological) is designed for students interested in they physical sciences and engineering. PHYS 1004 (Environmental & Life Science) is designed for students interested in environmental, medical and life sciences.

You may choose to study PHYS 1003 (Technological) in either semester, but we recommend completing one of the semester 1 units beforehand if possible.

Advanced Physics
Junior Physics units of study are also offered at the Advanced level.

To enrol in PHYS 1901 (Advanced) or PHYS 1902 (Advanced) you must have a UAI of 96 or more or a HSC Physics result in Band 6 (or equivalent), or have successfully completed the other Junior Physics (Advanced) unit, or have a Distinction or better in the appropriate non-Advanced Junior Physics unit.

If you have a very high UAI you may be invited to participate in activities of the Physics Talented Student Program (TSP).

Assumed knowledge
A bridging course in Physics is recommended for students who did not study Physics for the HSC.

Other Junior options
Students interested in Astronomy may enrol in PHYS 1500 (Semester 2 only). It should be noted that PHYS 1500 is a general interest course, has no mathematics or physics requirements and does not count towards the 12 credit points needed for progression to Intermediate Physics or the BSc (Marine Science) program. Students wishing to pursue careers in Astronomy or Astrophysics should also take other Physics units in order to progress to Intermediate Physics.

PHYS 1600 Concepts and Issues in Physics Science is offered in the Faculty of Arts. It does not count towards the 12 credit points needed for progression to Intermediate Physics. PHYS 1600 does not count as a Science unit, but as an Arts unit.

Physiology

Major offered at the Advanced level.

6 credit points of Junior Chemistry +12 credit points of Mathematics + 18 credit points of Junior Chemistry, Biology, Physics, Psychology + 12 credit points from other areas.

Plant Science

Major offered at the Advanced level.

Recommended Junior combinations for a Plant Science major.

12 credit points of Junior Biology are needed to enrol in Intermediate units of study in Plant Science. BIOL (1001 or 1101 or 1901) + BIOL (1002 or 1902) + 12 Junior credit points in Chemistry, Mathematics or Physics.

Psychology

Planning for a Psychology major
12 credit points of Junior Psychology are needed to enrol in Intermediate units of study in Psychology. A major in Psychology requires 24 credit points of Intermediate Psychology plus at least 24 credit points of Senior Psychology. The Psychology major is not offered at the Advanced level.

Recommended Junior combinations for a Psychology major
PSYC 1001 +PSYC 1002+ 12 credit points of Junior units of study in Mathematics including MATH 1015 or 1005 or 1905 (statistics) + 12 credit points of Junior Science electives +12 credit points of Junior electives.

Junior Psychology Information
PSYC 1001 and 1002 provide an introduction to Psychology for all Psychology students.

Assumed Knowledge

All students are eligible to enrol in PSYC 1001 and 1002. There is no assumed knowledge.

Soil Science

Major not offered at the Advanced level.
12 credit points of Junior units of study in each of Chemistry + Mathematics + Physics or Computer Science +12 credit points from other areas.

Statistics

Major offered at the Advanced level.

Planning for a Statistics major
The Junior Mathematics, units MATH 1005/1905 and MATH 1001/1901/1906, are needed to enrol in Intermediate units of study in Statistics and MATH 1003/1903/1907 are required to complete a major in Statistics. Students intending to major in Statistics should take 12 credit points of Intermediate Statistics. The Statistics major is also offered at the Advanced level.

Recommended Junior combinations for a Statistics major
See entry under Mathematics.

Junior Mathematics information
See entry under Mathematics.

Advanced Mathematics and Special Studies
See entry under Mathematics.

Assumed knowledge
Bridging courses in mathematics are recommended for students who do not have the assumed knowledge for their selected level of Statistics study.

Statistics in other majors
Computer Science majors: Should include MATH 1005/1905.
Biological and other Life Science majors: should include MATH 1015/1005/1905.

Bachelor of Science (Advanced)

Degree Code: LH000 Stream: 4

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Enrolment guide

In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics; and
- 12 credit points of elective units of study from Science, Arts, Economics, Engineering or other faculties.
- no more than 48 credit points from Junior units of study;

Advanced students usually take 24 credit points of the above at the Advanced level.

To complete your degree you must satisfy the requirements outlined for the BSc and gain credit for at least 144 credit points. The 144 credit points required for the degree must include:

- at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units;
- at least 48 credit points of Senior units of study of which at least 24 credit points are completed at the Advanced level or as TSP units in a single Science subject area; and
- at least 12 credit points from the Science subject areas of Mathematics and Statistics.

Progression requirements

You should note that you must maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the BSc.

Sample Bachelor of Science (Advanced)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	MATH 1XXX	MATH 1XXX	Science elective A 1XXX/19XX	Science elective B 1XXX/19XX	Elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	Science elective A 1XXX/19XX	Science elective B 1XXX/19XX	Elective		
		3	3	6	6	6		24
Year 2	1	Major 1 Intermediate 29XX	Major2Intermediate or Science elective 2XXX	Intermediate or Senior Science elective	Intermediate or Senior elective			
		6	6	6	6			24
	2	Major 1 Intermediate 29XX	Major 2 Intermediate or Science elective 2XXX	Intermediate or Senior elective	Intermediate or Senior elective			
		6	6	6	6			24
Year 3	1	Major 1 39XX	Major 1 39XX	Major 2 or elective 3XXX	Major 2 or elective 3XXX			
		6	6	6	6			24
	2	Major 1 39XX	Major 1 39XX	Major 2 or elective 3XXX	Major 2 or elective 3XXX			
		6	6	6	6			24
							Total credit points:	144

Require: 144cp total, min. 96cp Science, max. 48cp Junior, min 36cp Junior Science incl. 12cp Maths, min. 48cp Senior, min. 12cp Intermediate Advanced and/or TSP, min. 24cp Senior Advanced and/or TSP major.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. See the Bachelor of Science entry for information about each major and recommended first year combinations of units of study. There is a sample degree program below and a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables. You may also wish to refer to the handbooks of other faculties as the degree resolutions allow.

Honours

There are Honours courses in all Science subject areas. Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 3.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring into the BSc (Advanced)

Students who have completed at least 48 credit points may, with the permission of the Dean, transfer to the BSc (Advanced) from the BSc or any of its streams if their mark averaged over all attempted units of study is 75 or greater, and they are able to enrol in the required number of Advanced level units or TSP units.

Universities Admissions Index (UAI)

The minimum UAI for admission to the Faculty varies from year to year.

Degree resolutions

See chapter 5.

Bachelor of Science (Advanced Mathematics)

Degree Code: LH000 Stream Code: 9

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Enrolment guide

In your Junior year you should complete:

- 12 credit points from Junior Advanced Mathematics and Statistics units of study;
- 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics; and
- 12 credit points of elective units of study from Science, Arts, Economics, Engineering or other faculties.

Advanced students usually take 24 credit points of the above at the Advanced level.

To complete your degree you must satisfy the requirements outlined for the BSc and gain credit for at least 144 credit points. The 144 credit points required for the degree must include:

- no more than 48 credit points from Junior units of study;
- at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics; and
- at least 48 credit points of Senior units of study of which at least 24 credit points are completed at the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics.

Progression requirements

You should note that you must maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the BSc.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. See the Bachelor of Science entry for information about majors in Mathematics and Statistics and recommended first year combinations of units of study. There is a sample degree program below and a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables. You may also wish to refer to the handbooks of other faculties as the degree resolutions allow.

Honours

There are Honours courses in Mathematics and Statistics. Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 3.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring into the BSc (Advanced Mathematics)

Students who have completed at least 48 credit points may, with the permission of the Dean, transfer to the BSc (Advanced Mathematics) from the BSc or any of its streams if their mark averaged over all attempted units of study is 75 or greater, and they are able to enrol in the required number of Advanced level units or TSP units.

Universities Admissions Index (UAI)

The minimum UAI for admission to the Faculty varies from year to year.

Degree resolutions

See chapter 5.

Sample Bachelor of Science (Advanced Mathematics)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	l	MATH 1XXX	MATH 1XXX	Science elective A 1XXX/19XX	Science elective B 1XXX/19XX	Elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	Science elective A 1XXX/19XX	Science elective B 1XXX/19XX	Elective		
		3	3	6	6	6		24
Year 2	l	MATH29XX	Major2Intermedi-ate or Science elective 2XXX	Intermediate or Senior elective	Intermediate or Senior elective			
		6	6	6	6			24
	2	MATH29XX	Major2Intermedi-ate or Science elective 2XXX	Intermediate or Senior elective	Intermediate or Senior elective			
		6	6	6	6			24
Year 3	l	MATH 39XX	MATH 39XX	Major 2 or elective 3XXX	Major 2 or elective 3XXX			
		6	6	6	6			24
	2	MATH39XX	MATH39XX	Major 2 or elective 3XXX	Major 2 or elective 3XXX			
		6	6	6	6			24
							Total credit points:	144

Require: 144cp total, min. 96cp Science, max. 48cp Junior, min 36cp Junior Science incl. 12cp Maths, min. 48cp Senior, min. 12cp Intermediate Advanced and/or TSP, min. 24cp Senior Advanced and/or TSP major.

Bachelor of Science (Bioinformatics)

Degree Code: LH019

Summary of requirements

The requirements for the degree are set out in Table IA: Bachelor of Science (Bioinformatics) (see chapter 3) and the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree.

Enrolment guide

In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 6 credit points of Junior units of study in the Science subject area of Biology;
- 6 credit points of Junior units of study in the Science subject area of Molecular Biology and Genetics (ie. MBLG1001);
- 12 credit points of Junior units of study in the Science subject area of Chemistry; and
- 12 credit points of Junior units of study in the Science subject area of Computer Science (ie. SOFT 1001/1901 and SOFT 1002/1902).

To complete your degree you must gain credit for at least 144 credit points as specified in Table IA: Bachelor of Science (Bioinformatics).

Plans of study

It is very important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below including information. See the Bachelor of Science entry for information about majors and recommended first year combinations of units of study. There is also a degree planner inside the back cover. Consultation with the degree coordinator or a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table IA: Bachelor of Science (Bioinformatics) and in Table I: Bachelor of Science in chapter 3. Unit of study descriptions follow the tables.

Honours

There are Honours courses in Science subject areas suitable for Bioinformatics students. Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 3.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring into the BSc (Bioinformatics)

Students may be permitted to transfer from other courses offered by the Faculty of Science or any of its streams into the BSc (Bioinformatics) with the permission of the Dean.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Sample Bachelor of Science (Bioinformatics)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH 1XXX	MATH 1XXX	BIOL 1XXX	CHEM 1XXX	SOFT 1XXX 1XXX		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	MBLG 1001	CHEM 1XXX	SOFT 1XXX		
		3	3	6	6	6		24
Year 2	1	INFO 2X10	MBLG 2XXX	Life Science elective	MATH/SOFT elective			
		6	6	6	6			24
	2	SOFT 2X30	MBLG 2XXX	Life Science elective	MATH/SOFT elective			
		6	6	6	6			24
Year 3	1	SOFT 3XXX	Life Science elective	Life Science elective	SOFT/MATH/PHYS elective			
		6	6	6	6			24
	2	BINF3101	Life Science elective	Life Science elective	SOFT/MATH/PHYS elective			
		6	6	6	6			24
							Total credit points:	144

Require: 144cp total, and units of study as per Table IA.

Bachelor of Science (Environmental)

Degree Code: LH017

Summary of requirements

The requirements for the degree are set out in Table IB: Bachelor of Science (Environmental) (see chapter 3) and the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree.

Enrolment guide

In your Junior year you should complete:

- ENVI 1002 and GEOL 1002;
- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 12 credit points of Junior units of study in the Science subject area of Biology;
- 12 credit points of Junior units of study in the Science subject area of Chemistry; and
- The study of some Biology, Chemistry or Mathematics at the Advanced level is recommended but not compulsory.

To complete your degree you must gain credit for at least 144 credit points as specified in Table IB: Bachelor of Science (Environmental). The 144 credit points required for the degree must include:

- the Intermediate Environmental Science units of study, ENVI 2111 and ENVI 2112;
- the Senior Environmental Science units of study, ENVI 3111, ENVI 3112, ENVI 3113 and ENVI 3114.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below. See the Bachelor of Science entry for additional information. There is also a degree planner inside the back cover. Consultation with the degree coordinator or a Faculty adviser is always recommended.

Students can also check the Environmental Science website (http://www.usyd.edu.au/envsci) for further information.

Units of study

The Science units of study available for this degree are set out in Table IB: Bachelor of Science (Environmental) and in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables.

Honours

There are Honours courses in Science subject areas suitable for Environmental Science students. Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 3.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring into the BSc (Environmental)

Students may be permitted to transfer from other courses offered by the Faculty of Science or any of its streams into the BSc (Environmental) with the permission of the Dean. You may also discuss your plans with the Environmental Science Administrative Coordinator (see chapter 1 for contact details).

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Sample Bachelor of Science (Environmental)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	MATH 1XXX	MATH 1XXX	ENVI 1002	BIOL 1X01	CHEM 1X01		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	GEOL 1002	BIOL 1X02	CHEM 1X02		
		3	3	6	6	6		24
Year 2	1	ENVI 2111	SOIL/CHEM elective	Science elective	Science elective			
		6	6	6	6			24
	2	ENVI 2112	GEOG elective	BIOL/MICR/PLNT elective	Science Elective			
		6	6	6	6			24
Year 3	1	ENVI 3111	ENVI 3113	Table IB elective	Table IB elective			
		6	6	6	6			24
	2	ENVI 3112	ENVI 3114	Table IB elective	Table IB elective			
		6	6	6	6			24
							Total credit points:	144

Require: 144cp total, and units of study as per Table IB.

Bachelor of Science (Marine Science)

Degree Code: LH021

Summary of requirements

The requirements for the degree are set out in Table IC: Bachelor of Science (Marine Science) (see chapter 3) and the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree.

Enrolment guide

In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 12 credit points of Junior units of study in the Science subject area of Biology;
- 12 credit points of Junior units of study in the Science subject areas of Geography and/or Geology;
- PHYS 1001 or 1002 or 1901; and
- CHEM1001 or 1101 or 1901.
- Some study at the Advanced level is recommended but not compulsory.

To complete your degree you must gain credit for at least 144 credit points as specified in Table IC: Bachelor of Science (Marine Science). The 144 credit points required for the degree must include:

- 18 credit points from Intermediate Marine Science units of study;
- 36 credit points from Senior Marine Science units of study; and
- no more than 48 credit points from Junior units of study.

You should also note that a stream of study is available in Tropical Marine Science within this degree program. No more than 12 credit points of Tropical Marine Science (NTMP) can be taken in any one year, and no more than 18 credit points of NTMP can count towards the degree.

The NTMP units of study are offered in block/intensive mode during Easter and July breaks and there are only a limited number of places available in each. Students may enrol in NTMP units of study starting in their Intermediate year (students must contact the Faculty Office for permission to enrol in these units of study) but places are not guaranteed and will be assigned based on merit.

The NTMP units of study are conducted at the following field stations in Queensland: North Stradbroke Island, Heron Island, Lizard Island, Orpheus Island, and One Tree Island, and students are responsible for their own travel and accommodation costs. Consult the University of the Sydney Institute for Marine Science (USIMS) for further information.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below. See the Bachelor of Science entry for additional information. There is also a degree planner inside the back cover. Consultation with a Faculty or USIMS adviser is always recommended. Students can also check the Marine Science website (http://www.usyd.edu.au/marine) for further information.

Units of study

The Science units of study available for this degree are set out in Table IC: Bachelor of Science (Marine Science), Table IB: Bachelor of Science (Environmental) and in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables.

Honours

There is an Honours course in Marine Science. Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 3.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring to the BSc (Marine Science)

Students may be permitted to transfer from other courses offered by the Faculty of Science or any of its streams into the BSc (Marine Science) with permission of the Dean.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Sample Bachelor of Science (Marine Science)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	MATH 1XXX	MATH 1XXX	PHYS1XXX	BIOL 1XXX	GEOL/GEOG		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	CHEM 1X01	BIOL 1XXX	GEOL/GEOG		
		3	3	6	6	6		24
Year 2	1	MARS 2X05	MARS 2X07	BIOL 2XXX	Science elective			
		6	6	6	6			24
	2	MARS 2X06	Science elective	BIOL 2XXX	Science elective			
		6	6	6	6			24
Year 3	1	Table IC elective	Table IC elective	Table IC elective	Science elective			
		6	6	6	6			24
	2	Table IC elective	Table IC elective	Table IC elective	Science elective			
		6	6	6	6			24
							Total credit points:	144

Require: 144cp total, and units of study as per Table IC.

Bachelor of Science (Molecular Biology and Genetics)

Degree Code: LH018

Summary of requirements

The requirements for the degree are set out in Table ID: Bachelor of Science (Molecular Biology and Genetics) (see chapter 3) and the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree.

Enrolment guide

In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics (it is recommended that students take units that assume completion of HSC Mathematics Extension 1 or 2 and include some statistics);
- BIOL (1001 or 1101 or 1901) and (1002 or 1003 or 1902 or 1903) (BIOL 1901 and BIOL 1902/3 is the preferred option);
- 12 credit points of Junior units of study in the Science subject area of Chemistry (CHEM 1908 and 1909 is the preferred option); and
- MBLG 1001 and MBLG 1999; and
- 6 credit points of elective Junior Science units of study: Physics or Computer Science are recommended.

To complete your degree you must gain credit for at least 144 credit points as specified in Table ID: Bachelor of Science (Molecular Biology and Genetics). All students in the Bachelor of Science (Molecular Biology and Genetics) must complete:

- at least 48 credit points of Intermediate units of study; and
- at least 48 credit points of Senior units of study of which at least 24 credit points are in a single Science subject area.

Progression requirements

You should note that you must maintain in units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the BSc.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below. See the Bachelor of Science entry for additional information. There is also a degree planner inside the back cover. Consultation with the degree coordinator or a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table ID: Bachelor of Science (Molecular Biology and Genetics) and in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables.

Honours

There are Honours courses in Science subject areas suitable for Molecular Biology and Genetics students. Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 3.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring into the BSc (Molecular Biology and Genetics)

Students who have completed at least 48 credit points may, with the permission of the Dean, be permitted to transfer to the BSc (Molecular Biology and Genetics) from the BSc or any of its streams if their mark averaged over all attempted units of study is 75 or greater.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Sample Bachelor of Science (Molecular Biology and Genetics)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	MATH 1XXX	MATH 1XXX	BIOL 1X01	CHEM 1908	Science elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	BIOL 1XXX	CHEM 1909	MBLG 1001	MBLG 1999	
		3	3	6	6	6	0	24
Year 2	1	MBLG 2X71	BCHM2X71	MICR2X21	Science elective			
		6	6	6	6			24
	2	MBLG 2X72	BCHM 2X72	CHEM 2XX3	Science elective			
		6	6	6	6			24
Year 3	1	BCHM 3X71	BCHM 3X81	BIOL 3X18	BIOL 3X27			
		6	6	6				24
	2	Table ID elective	Table ID elective	Table ID elective	Table ID elective	MBLG 3999		
		6	6	6	6	0		24
							Total credit points:	144

Require: 144cp total, and units of study as per Table ID.

Bachelor of Science (Molecular Biotechnology)

Degree Code: LH022

Summary of requirements

This degree program is taught mainly by departments in the Faculty of Science and includes industry participation.

The requirements for the degree are set out in Table IE: Bachelor of Science (Molecular Biotechnology) (see chapter 3) and the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree.

Enrolment guide

In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 12 credit points of Junior units of study in the Science subject area of Biology;
- 12 credit points of Junior units of study in the Science subject area of Chemistry (preferred combination is CHEM 1908 and CHEM 1909);
- MBLG1001;and
- 6 credit points of elective units of study from Science, Agriculture, Arts, Economics, Engineering or other faculties.

To complete your degree you must gain credit for at least 144 credit points as specified in Table IE: Bachelor of Science (Molecular Biotechnology).

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below. See the Bachelor of Science entry for additional information. There is also a degree planner inside the back cover. Consultation with the degree coordinator or a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table IE: Bachelor of Science (Molecular Biotechnology) and in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables.

Honours

Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 3. Candidates for the Honours degree in Molecular Biotechnology shall complete an Honours program incorporating research in molecular biotechnology and related areas through one of the Departments or Schools within the Faculty of Science. Under some circumstances co-supervision may be provided by suitably qualified staff based in relevant industrial settings.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring into the BSc (Molecular Biotechnology)

Students may transfer from other courses offered by the Faculty of Science or any of its streams into the BSc (Molecular Biotechnology) with the permission of the Dean.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Sample Bachelor of Science (Molecular Biotechnology)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH 1XXX	MATH 1XXX	BIOL 1XXX	CHEM 1XXX	Elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	BIOL 1XXX	CHEM 1XXX	MBLG 1001		
		3	3	6	6	6		24
Year 2	1	BCHM2X71	MBLG2X71	CHEM 2XXX	Elective			
		6	6	6	6			24
	2	MOBT2102	MBLG 2X72	CHEM 2XXX	Elective			
		6	6	6	6			24
Year 3	1	MOBT3101	BIOL 3X27	Table IE Elective 3XXX	Table IE elective 3XXX			
		6	6	6	6			24
	2	MOBT3102	CHEM 3XXX	BCHM/MICR 3XXX	Table IE elective 3XXX			
		6	6	6	6			24
							Total credit points:	144

Require: 144cp total, and units of study as per Table IE.

Bachelor of Science (Nutrition)

Degree Code: LH020

The requirements for the degree are set out in Table IF: Bachelor of Science (Nutrition) (see Chapter 3) and the Senate and Faculty Resolutions (see Chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree.

Enrolment guide

In your Junior year you should complete:

- 12 credit points in the Science subject areas of Mathematics and Statistics;
- 12 credit points in the Science subject area of Biology (excluding BIOL 1101);
- 12 credit points in the Science subject area of Chemistry (CHEM 1908 and CHEM 1909 preferred option);
- 6 credit points in the Science subject areas of Computer Science, Physics or Psychology; and
- MBLG1001.

To complete your degree you must gain credit for at least 192 credit points in total as specified in Table IF: Bachelor of Science (Nutrition).

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below. See the Bachelor of Science entry for additional information. There is also a degree planner inside the back cover. Consultation with the degree coordinator or a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table IF: Bachelor of Science (Nutrition) and in Table I: Bachelor of Science in chapter 3. Unit of study descriptions follow the tables.

Progression requirements

A minimum requirement for progression in the BSc (Nutrition) will be set annually and will be based on WAM. Students must achieve a WAM of 60 in Junior year and a WAM of 65 in Intermediate and Senior years, or be transferred to the BSc.

Honours

Please refer to "Honours in the Faculty of Science" in this chapter, and to Table VI: Honours units of study in chapter 3. Candidates for the Honours degree in Nutrition shall complete an Honours program in either (1) clinical strand or (2) by research. Students who enrol in the BSc (Nutrition) in order to achieve accreditation as a dietitian will need to complete the clinical strand.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring into the BSc (Nutrition)

Students may transfer from other courses offered by the Faculty of Science or any of its streams into the BSc (Nutrition) with the permission of the Dean.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Sample Bachelor of Science (Nutrition)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	MATH 1XXX	MATH 1XXX	BIOL 1001/1901	CHEM 1XXX	SOFT/INFO/ PHYS/ PSYC elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	BIOL 1XXX	CHEM 1XXX	MBLG 1001		
		3	3	6	6	6		24
Year 2	1	NUTR 2911	MBLG 2X71	PHSI 2005	MICR 2021/CHEM/ PCOL elective			
		6	6	6	6			24
	2	NUTR 2912	BCHM 2X72	PHSI 2006	MICR 2022/ CHEM/ PCOL elective			
		6	6	6	6			24
Year 3	1	NUTR 3911	NUTR 3921	AGCH3025/Table IF Senior elective	AGCH3026/Table IF Senior elective			
		6	6	6	6			18
	2	NUTR 3912	NUTR 3922	BCHM 3X72	BCHM 3X82			
		6	6	6	6			30
Year 4 (Clinical*)	1	NUTR 4001						
		24						24
	2	NUTR 4002						
		24						24
Year 4 (Research*)	1	NUTR 4101	NUTR 4102					
		12	12					24
	2	NUTR 4103	NUTR 4014					
		12	12					24
							Total credit points:	192

Require: 192cp total, and units of study as per Table IF

^Students complete Honours in either Nutrition and Dietetics (Clinical) or in Nutrition (Research) strands.

Combined BAppSc (Exercise and Sport Science)/BSc (Nutrition) degrees

See also entry for BSc (Nutrition) and Faculty of Health Sciences Handbook.

Degree Code SHI 15

Summary of requirements

The requirements for the degrees are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. A student may proceed concurrently to the degrees of Bachelor of Applied Science (Exercise and Sport Science) and Bachelor of Science (Nutrition).

Enrolment guide

To qualify for the award of the degrees a student shall complete at least 240 credit points as specified in Table IF Part E, including:

- at least 138 credit points from Science subject areas including at least 12 credit points from Mathematics and Statistics;
- at least 102 credit points of units of study in Exercise and Sport Science; and
- an Honours year (48 credit points) in Nutrition or Nutrition and Dietetics.

Units of study

Units of study are listed in Table IF; unit prerequisites are listed in Table I and Table IF, and in Table 9.2 of Faculty Resolutions for the degree of BAppSc (Exercise and Sport Science), Faculty of Health Sciences. Unit descriptions are found following the tables in each handbook.

Progression requirements

A minimum requirement for progression is set annually based on WAM and performance in Nutrition units. Students must achieve a WAM of at least 60 in their first year and a WAM of least 65 in subsequent years and at least a Credit (65) in all Intermediate and Senior NUTR units or be transferred from the Combined program to one of the related degrees.

Abandoning and discontinuing

A student may abandon the combined degree course and elect to complete either a BSc, a BSc (Nutrition), a BAppSc (Exercise and Sport Science) or a BAppSc (Exercise, Sport Science and Nutrition) in accordance with the resolutions governing those degrees. A student who does not qualify to undertake an Honours course in Nutrition or Nutrition and Dietetics or who chooses to exit after completing year 4 of the program may graduate with the degree of Bachelor of Applied Science (Exercise Sport Science and Nutrition) in accordance with the resolutions of the Faculty of Health Sciences.

Alternative Honours in BAppSc

In the fifth year a student may elect to undertake an Honours course in Exercise and Sports Science and graduate with the degree of Bachelor of Applied Science (Exercise Sport Science and Nutrition) Honours in accordance with the resolutions of the Faculty of Health Sciences.

Supervision

Students in years 1-4 of the program will be under the general supervision of the Faculty of Health Sciences; students in the Honours year will be under the supervision of the faculty in which the Honours course is being undertaken.

Universities Admission Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5

Sample Bachelor of Applied Science (Exercise and Sports Science)/ Bachelor of Science (Nutrition)								
	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	CHEM 1101/1908	BACH 1161	BIOS 1159	EXSS 1018			
		6	6	6	6			24
	2	CHEM 1102/1909	MBLG 1001	BIOS 1133	BIOS 1160	EXSS 1033		
		6	6	3	6	3		24
Year 2	1	MBLG 2071	NUTR2911	BIOS 2098	EXSS 2019	MATH 1015		
		6	6	3	6	3		24
	2	BCHM 2072	NUTR2912	EXSS 1029	EXSS 2022			
		6	6	6	6			24
Year 3	1	MATH 1011	EXSS 2016	EXSS 2018	EXSS 3023	EXSS 3024		
		3	3	6	6	6		24
	2	STAT 2012	EXSS 2025	EXSS 2026	EXSS 3027			
		6	6	6	6			24
Year 4	1	NUTR3911	NUTR3921	EXSS 3037	EXSS 3042			
		6	6	6	6			24
	2	NUTR3912	NUTR 3922	BCHM 3072	BCHM 3082			
		6	6	6	6			24
Require: 192cp total, min. 90cp Science, min. 102cp Exercise and Sport Science								

Honours in Nutrition and Dietetics								
Year 5	1	NUTR 4001						
		24						24
	2	NUTR 4002						
		24						24
BAppSc (Ex & Sports Sc) & BSc (Nutr) Nutrition and Dietetics Honours							Total credit points:	240
Require: 240cp total, min. 138cp Science, min. 12cp Maths, min. 102cp Exercise and Sport Science, 48cp Honours units in Nutrition & Dietetics.								

Honours in Nutrition								
Year 5	1	NUTR 4101	NUTR 4102					
		12	12					24
	2	NUTR 4103	NUTR 4104					
		12	12					24
BAppSc (Ex & Sports Sc) & BSc (Nutr) Nutrition Honours							Total	240
Require: 240cp total, min. 138cp Science, min., 36cp Junior Science incl. 12cp Mathematics, min. 102cp Exercise and Sport Science, 48cp Honours units in Nutrition.								

Combined Science/Law degrees (BSc/LLB)

Degree Code: LH006

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

A student may proceed concurrently to the degrees of Bachelor of Laws and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics).

Enrolment guide

In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics;
- LAWS 1006, LAWS 1010 and LAWS 1008.

To qualify for the award of the BSc degree a student must complete 96 credit points from Science units of study set out in Table I: Bachelor of Science, and 48 credit points from units set out in Table II: Law units of study, including:

- at least 12 credit points from the Science subject areas of Mathematics and Statistics;
- 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
- 60 credit points of Intermediate/Senior units of study in Science subject areas;
- a major in a Science area.

The order in which Law units of study are taken is specified in the Resolutions of the Senate and Faculty for the Bachelor of Laws. *Students who first enrolled in a combined Science/Law degree prior to 2001 should note that the order and credit point values of some units of study have been changed as the result of adoption of new resolutions. Such students will complete their degrees under old resolutions and should consult the information on page 122 of the 2000 Faculty of Science handbook.*

For commencing 2006 students, Law units of study are taken in the following sequence:

- in the first year of attendance the student will take LAWS 1006, LAWS 1008 and LAWS 1010;
- in the second year of attendance the student will take LAWS 1002 and LAWS 1003; and
- in the third year of attendance the student will take LAWS 3000 and LAWS 3002.

In the combined Science/Law course students will spend the first three years at the Camperdown campus during which time the Science degree will be completed along with the equivalent of one year's study towards the Law degree. The remainder of the course will be completed at the Law School in the city (St James campus) over a period of two years. Full details of the units of study to be completed during this time are included in the Faculty of Law handbook. General enquiries about the combined Science/Law course can be directed to staff in the Faculty of Science Office.

Advanced streams

To qualify for the award of the BSc degree in an Advanced stream, a student shall complete the requirements for the BSc degree outlined above and in addition, except with the permission of the Dean,

- include at least 12 credit points of Intermediate Science units of study at either the Advanced level or as TSP units (for BSc (Advanced Mathematics) at least 12 credit points from the Science subject areas of Mathematics and Statistics at either the Advanced level or as TSP units);
- include at least 24 credit points of Senior Science units of study at the Advanced level or as TSP units in a single Science subject area (for the BSc (Advanced)) or 24 credit points of Senior units of study at the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics (for the BSc (Advanced Mathematics))

You should note that you must maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the BSc.

Sample Bachelor of Science/Bachelor of Laws (Years 1 to 3)

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	LAWS 1006		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	LAWS 1010	LAWS 1008	
		3	3	6	6	6	0	24
Year 2	1	Major Intermediate 2XXX	Intermediate Science elective 2XXX	LAWS 2008	Science elective			
		6	6	6	6			24
	2	Major Intermediate 2XXX	Intermediate Science elective 2XXX	LAWS 2009	Science elective			
		6	6	6	6			24
Year 3	1	Major 3XXX	Major 3XXX	LAWS 3000	Science elective			
		6	6	XX	6			XX
	2	Major 3XXX	Major 3XXX	LAWS 3002				
		6	6	XX				XX
							Total credit points:	144

Require: 144cp total, min. 96cp Science, min 36cp Junior Science incl. 12cp Maths, min. 60cp Intermediate & Senior Science, one major.
Law units as per Table II.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below. See the Bachelor of Science entry for information about each major and recommended first year combinations of units of study. There is also a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science, and Table II: Laws units of study in chapter 3. Unit descriptions follow the tables. You may also wish to refer to the Faculty of Law handbook for higher year law options.

Honours

Students interested in graduating with Honours should bear the following in mind:

- Students in the combined Law course who wish to take an Honours program in Science may elect to spend an additional year in Science after the third year of the Combined course. Please note that the Faculty of Law generally permits only one year of suspension of candidature from the Bachelor of Laws degree (including the combined Law degree). Alternatively, it may be possible for students to defer an Honours year in Science until after the completion of the entire combined course.
- There is no separate Honours year for the degree of Bachelor of Laws. Graduation with honours in Law is based on weighted average marks (including failures) and requires a high standard of performance in all units of study for the LLB degree, including units of study taken during the 1 st three years of the combined course while the student is completing the Science segment of the course.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Combined Science/Arts degree

See also Summary of Requirements of the BSc.

Degree code LH011 Science/Arts

Summary of requirements

Note that from 2006 students will be admitted to the Bachelor of Science/Arts course only.

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

A student may proceed concurrently to the degrees of Bachelor of Arts and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics) within the BSc/BA course.

Enrolment guide

To qualify for the award of the pass degrees in the BSc/BA course a student shall complete units of study to a total value of at least 240 credit points including:

- at least 96 credit points from Science subject areas;
- at least 12 credit points from the Science subject areas of Mathematics and Statistics;
- at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
- no more than 96 credit points from Junior units of study;
- a major in a Science area; and
- at least 72 credit points of Senior units of study in Arts subject areas, including a major from Part A of the table of undergraduate units of study in the Faculty of Arts.

Advanced streams

To qualify for the award of the pass degree in the BSc (Advanced) stream, a student shall complete the requirements for the BSc and in addition:

- at least 12 credit points of Intermediate Science units of study at either the Advanced level or as TSP units; and
- at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area;
- maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the non-Advanced stream.

To qualify for the award of the pass degree in the BSc (Advanced Mathematics) stream, a student shall complete the requirements for the BSc degree as outlined above and in addition:

- include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics; and
- include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics.

You should note that you must maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the non-Advanced stream.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below. See the Bachelor of Science entry for information about each major and recommended first year combinations of units of study. There is also a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables. The Arts units of study available for this degree are set out in Part A of the table of undergraduate units of study in the Faculty of Arts handbook.

Honours

Students who are qualified to do so may undertake honours courses in either or both degrees or a joint honours course at the completion of the combined degrees. Please refer to "Honours in the Faculty of Science" in this chapter, and to Table VI: Honours units of study in chapter 3.

Abandoning and discontinuing

Students may abandon the combined degree course and elect to complete either a BSc or a BA in accordance with the Resolutions governing those degrees.

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Supervision

Supervision of all students in the combined degrees will be the responsibility of the Faculty of Science and the Faculty of Arts.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Sample Bachelor of Science/Bachelor of Arts

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	l	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	Arts elective 1XXX		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	Arts elective 1XXX		
		3	3	6	6	6		24
Year 2	l	Science major Intermediate 2XXX	Intermediate Science elective 2XXX	Intermediate Science elective 2XXX	Arts elective 1XXX			
		6	6	6	6			24
	2	Science major Intermediate 2XXX	Intermediate Science elective 2XXX	Intermediate Science elective 2XXX	Arts elective 1XXX			
		6	6	6	6			24
Year 3	l	Science major 3XXX	Science major 3XXX	Elective	Arts elective 1XXX			
		6	6	6	6			24
	2	Science major 3XXX	Science major 3XXX	Elective	Arts elective 1XXX			
		6	6	6	6			24
Year 4	l	Elective	Arts Senior elective	Arts Senior elective	Arts major Senior elective			
		6	6	6	6			24
	2	Int/Senior elective	Arts Senior elective	Arts Senior elective	Arts major Senior elective			
		6	6	6	6			24
Year 5	l	Arts Senior elective	Arts Senior elective	Arts major Senior elective	Arts major Senior elective			
		6	6	6	6			24
	2	Elective	Arts Senior elective	Arts major Senior elective	Arts major Senior elective			
		6	6	6	6			24
							Total credit points:	240

Require: 240cp total, max 96cp Junior, min., 96cp Science, min 36cp Junior Science incl. 12cp Maths, one Science major, min 72cp Senior Arts including one Arts major.

Combined Engineering/Science degrees

See also Summary of Requirements of the BSc.

Degree Code HH015

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

A student may proceed concurrently to the degrees of Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics) and any stream of the Bachelor of Engineering.

Enrolment guide

To qualify for the award of the pass degrees a student shall complete units of study to a total value of at least 240 credit points including:

- 96 credit points from Science subject areas;
- units of study as prescribed in the BE Specialisation Requirement Tables for the specialisation that the student is pursuing; and
- a major in a Science area.

Advanced streams

To qualify for the award of the pass degree in the Advanced or Advanced Mathematics stream of the BSc a student must:

- complete at least 54 credit points of Intermediate/Senior Science units of study of which at least 36 credit points shall be completed at the Advanced level or as TSP units; and
- complete at least 24 credit points of Senior Science units of study at the Advanced level or as TSP units in a single Science subject area (for the BSc (Advanced)) or 24 credit points of Senior units of study at the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics (for the BSc (Advanced Mathematics)).

You should note that you must maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be awarded the Bachelor of Science.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. See the Bachelor of Science entry for information about each major and recommended first year combinations of units of study. There is a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables. The Engineering units of study available for this degree are set out in tables in the Faculty of Engineering handbook.

Honours

Students who are so qualified may be awarded honours in the BE degree or undertake an honours course in the BSc degree. Please refer to "Honours in the Faculty of Science" in this chapter, and to Table VI: Honours units of study in chapter 3.

Abandoning and discontinuing

Students may abandon the combined degree course and elect to complete either a BSc or a BE in accordance with the Resolutions governing those degrees.

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships.

Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Supervision

Students will be under the general supervision of the Faculty of Engineering however students may refer to the Faculty of Science Office for additional information.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Double degree in Science/Engineering

Degree Code LH000

Admission requirements

A student enrolled for a Bachelor of Engineering degree may be permitted to transfer to a BSc degree if:

- at least 96 credit points from units of study in Engineering have been completed with the grade of Pass or better; and
- the student is qualified to enrol in a major in a Science area.

For admission to the Advanced and Advanced Mathematics streams a student must have completed at least 48 credit points of units of study from the BSc with a mark averaged over all attempted units of study of 75 or greater and have met the prerequisites to be able to enrol in the required number of Advanced level units or TSP units.

Enrolment guide

To qualify for the award of the pass degree a student shall complete units of study to a value of at least 48 credit points including:

- 42 credit points of Intermediate/Senior units of study in Science subject areas; and
- a major in a Science area.

Advanced streams

To qualify for the award of the pass degree in the Advanced or Advanced Mathematics stream of the BSc a student shall in addition:

- include at least 72 credit points of Intermediate/Senior Science units of study; and
- include at least 24 credit points of Senior Science units of study at the advanced level or as TSP units in a single Science subject area (for the BSc (Advanced)) or 24 credit points of Senior units of study at the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics (for the BSc (Advanced Mathematics))

You should note that you must maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the Bachelor of Science.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. See the Bachelor of Science entry for information about each major and recommended first year combinations of units of study. There is a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables. The Engineering units of study available for this degree are set out in tables in the Faculty of Engineering handbook.

Pass (Concessional)

Pass (Concessional) will no longer be awarded by the Faculty of Science from 2004.

Method of candidature

The requirements outlined above must be completed in one year of full-time study or two years of part-time study. Students who complete at least 42 but less than 48 credit points in the prescribed time limits may in the following year of enrolment in the BE complete the remaining units to satisfy the requirements of the BSc. Students who complete less than 42 credit points may apply to be readmitted to the degree, subject to Resolutions relating to credit transfer.

Applications

Bachelor of Engineering students should apply to the Faculty of Science before 15 November in the year prior to candidature.

Honours

Students who are qualified may be awarded honours in the BE degree or undertake an honours course in the BSc. Please refer to "Honours in the Faculty of Science" in this chapter, and to Table VI: Honours units of study in chapter 3.

Discontinuing

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Degree resolutions

See chapter 5.

Combined Science/Commerce degrees

See also Summary of Requirements of the BSc.

Degree Code: LH014

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

A student may proceed concurrently to the degrees of Bachelor of Commerce and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics).

Enrolment guide

In your Junior year you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics; and
- 12 credit points of Junior units of study from either Economics, Accounting or the combination ECMT 1010 and INFS 1000.

To qualify for the award of the pass degree a student must complete successfully units of study amounting to a total of 240 credit points, comprising:

1. in the first six semesters of enrolment at a grade of Pass or better:
(a) 12 credit points of units of study from the Science subject areas of Mathematics and Statistics listed in Table I: Bachelor of Science;
(b) at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
(c) 12 credit points in Junior units of study from each of Accounting and Economics;
(d) ECMT 1010, except that a student shall complete an alternative Junior Economics and Business unit of study other than those in (c) and (e) if MATH1015/1005/1905 has been completed;
(e)INFS 1000; and
(f) a minimum of 60 credit points from Intermediate and Senior units of study from Science subject areas.

2. no more than 100 credit points from Junior units of study;

3. at least 96 credit points of units of study taught by the Faculty of Economics and Business;

4. no more than 48 credit points of Junior units of study taught by the Faculty of Economics and Business; and

5. a major in a Science area, and a major or double major in Economics and Business from the list of approved majors for the Bachelor of Commerce.

Advanced streams

To qualify for the award of the pass degree in the BSc (Advanced) stream, a student shall complete the requirements for the BSc and in addition:

- include at least 12 credit points of Intermediate Science units of study at either the Advanced level or as TSP units; and
- include at least 24 credit points of Senior units of study at the either the Advanced level or as TSP units in a single Science subject area;

You should note that you must maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the non-Advanced stream.

To qualify for the award of the pass degree in the BSc (Advanced Mathematics) stream, a student shall complete the requirements for the BSc degree and in addition:

- include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics; and
- include at least 24 credit points of Senior units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics.

You should note that you must maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the non-Advanced stream.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below. See the Bachelor of Science entry for information about each major and recommended first year combinations of units of study. There is also a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3.Unit descriptions follow the tables. The Commerce units of study available for this degree are set out in the Faculty of Economics and Business handbook. You may also wish to refer to the handbooks of other faculties as the degree resolutions allow.

Honours

Students who are qualified to do so may undertake honours courses in either or both degrees or a joint honours course on completion of the combined degree. Please refer to "Honours in the Faculty of Science" in this chapter, and to Table VI: Honours units of study in chapter 3.

Abandoning and discontinuing

Students may abandon the combined degree course and elect to complete either a BSc or a BCom in accordance with the Resolutions governing those degrees.

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Supervision

The Faculty of Science is the Supervising Faculty for the Bachelor of Science/Commerce. However for student matters related to the Bachelor of Commerce component (eg, credit, graduation and progression advice) students should refer to the Faculty of Economics and Business Student Information Office.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Sample Bachelor of Science/Bachelor of Commerce

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	Commerce Junior core 1XXX		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	Commerce Junior core 1XXX		
		3	3	6	6	6		24
Year 2	1	Science major Intermediate 2XXX	Intermediate Science elective 2XXX	Intermediate Science elective 2XXX	Commerce Junior core 1XXX			
		6	6	6	6			24
	2	Science major Intermediate 2XXX	Intermediate Science elective 2XXX	Intermediate Science elective 2XXX	Commerce Junior core 1XXX			
		6	6	6	6			24
Year 3	1	Science major 3XXX	Science major 3XXX	Commerce/ Science elective	Commerce Junior core 1XXX			
		6	6	6	6			24
	2	Science major 3XXX	Science major 3XXX	Commerce/ Science elective	Commerce Junior core 1XXX			
		6	6	6	6			24
Year 4	1	Elective	Commerce Senior elective	Commerce Senior elective	Commerce major Senior elective			
		6	6	6	6			24
	2	Elective	Commerce Senior elective	Commerce Senior elective	Commerce major Senior elective			
		6	6	6	6			24
Year 5	1	Int/Senior elective	Commerce Senior elective	Commerce major Senior elective	Commerce major Senior elective			
		6	6	6	6			24
	2	Int/Senior elective	Commerce Senior elective	Commerce major Senior elective	Commerce major Senior elective			
		6	6	6	6			24
							Total credit points:	240

Require: 240cp total, max. lOOcp Junior, min. 96cp Science, min. 36cp Junior Science incl. 12cp Maths, one Science major, min., 96cp Commerce, max. 48cp Junior Commerce units, either a Commerce major (32cp) or a Commerce double major (48cp).

Combined Nursing/Science degrees

See also Summary of Requirements of the BSc.

Degree code GN010

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

A student may proceed concurrently to the degrees of Bachelor of Nursing and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics).

Enrolment guide

To qualify for the award of the pass degrees a student shall complete units of study to a total value of at least 240 credit points including:

- at least 96 credit points from Science subject areas including at least 12 credit points from the Science subject areas of Mathematics and Statistics;
- 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
- a major in a Science area;
- no more than 60 credit points from Junior Science units of study;
- at least 132 credit points of units of study listed in the table of units for the degree of BN; and
- a further 12 credit points of electives taken from either Science or Nursing.

Advanced streams

To qualify for the award of the pass degree in the BSc (Advanced) stream, a student shall complete the requirements for the BSc and in addition:

- include at least 12 credit points of Intermediate Science units of study at either the Advanced level or as TSP units; and
- include at least 24 credit points of Senior units of study at the either the Advanced level or as TSP units in a single Science subject area;
- maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the Bachelor of Science.

To qualify for the award of the pass degree in the BSc (Advanced Mathematics) stream, a student shall complete the requirements for the BSc degree and in addition:

- include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics; and
- include at least 24 credit points of Senior units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics.

You should note that you must maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the Bachelor of Science.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. See the Bachelor of Science entry for information about each major and recommended first year combinations of units of study. There is a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables. The Nursing units of study available for this degree are set out in the Faculty of Nursing handbook.

Honours

Students who are qualified to do so may undertake honours courses in either degree or both degrees or a joint honours course on completion of the combined degree.

Abandoning and discontinuing

Students may abandon the combined degree course and elect to complete either a BSc or a BN in accordance with the Resolutions governing those degrees.

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Supervision

Students will be under the general supervision of the Faculty of Nursing.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Combined Education/Science degrees

See also Summary of Requirements of the BSc.

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

A student may proceed concurrently to the degrees of Bachelor of Education (Secondary) and Bachelor of Science, Bachelor of Science (Advanced), Bachelor of Science (Advanced Mathematics) or Bachelor of Science (Psychology). Please note that there is no new intake in the BEd/BSc(Psychology) degree in 2006.

Enrolment guide

BEd (Secondary: Science)/BSc
To qualify for the award of the pass degrees a student shall complete units of study to a total value of at least 240 credit points including:

- at least 96 credit points from Science subject areas and 132 credit points from prescribed Education units of study;
- at least 12 credit points from the Science subject areas of Mathematics and Statistics;
- at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
- a major in a Science area;
- a major in Education; and
- at least 84 credit points of units of study in Curriculum and Professional Studies in Secondary Education.

BEd (Secondary: Mathematics)/BSc
To qualify for the award of the pass degrees a student shall complete units of study to a total value of at least 240 credit points including:

- at least 96 credit points from Science subject areas and 132 credit points from prescribed Education units of study;
- at least 12 credit points from the Science subject areas of Mathematics and Statistics;
- at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
- a major in the Science subject area of Mathematics or Statistics;
- a major in Education; and
- at least 84 credit points of units of study in Curriculum and Professional Studies in Secondary Education.

Advanced streams

To qualify for the award of the pass degree in the BSc (Advanced) stream, a student shall complete the requirements for the BSc and in addition:

- include at least 12 credit points of Intermediate Science units of study at either the Advanced level or as TSP units; and
- include at least 24 credit points of Senior units of study at the either the Advanced level or as TSP units in a single Science subject area;

You should note that you must maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the Bachelor of Science.

To qualify for the award of the pass degree in the BSc (Advanced Mathematics) stream, a student shall complete the requirements for the BSc degree and in addition:

- include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics; and
- include at least 24 credit points of Senior units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics.

You should note that you must maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment, or be transferred to the Bachelor of Science.

BEd (Secondary)/BSc (Psychology)
There is no new intake for this degree in 2006

To qualify for the award of the award of the pass degrees a student shall complete units of study to a total value of at least 244 credit points including:
Year I

- Junior units of study in Education, as specified in the table of units of study, total of 12 credit points; and
- Specified Junior units of study in Psychology, 12 credit points; and
- Junior units of study in Science, 24 credit points, of which 12 credit points must be in Mathematics and 12 in Chemistry

Year II

- Units of study in Education, as specified in the table of units of study, total of 18 credit points; and
- Specified Intermediate level units of study in Psychology, 18 credit points; and
- Intermediate level units of study selected from Science Table 1, 12 credit points, which must be in the selected Science teaching subject.

Year III

- Units of study in Education, as specified in the table of units of study, total of 18 credit points; and
- Specified Senior units of study in Psychology, 30 credit points.

Year IV

- Units of study in Education, as specified in the table of units of study, including professional experience, 24 credit points; and
- Specified units of study in Psychology, 24 credit points.

YearV

- Units of study in Education, as specified in the table of units of study, including professional experience, 16 credit points; and
- Specified units of study in Psychology, 20 credit points; and
- Senior units of study selected from Science Table 1, 12 credit points, to complete study in the Science teaching subject.

The Bachelor of Science (Psychology) is not available at an Advanced level.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. See the Bachelor of Science entry for information about each major and recommended first year combinations of units of study. There is a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables. The Education units of study available for this degree are set out in the Faculty of Education handbook.

Honours

Students who are qualified to do so may undertake honours courses in either degree or both degrees or a joint honours course on completion of the combined degree. Please refer to "Honours in the Faculty of Science" in this chapter, and to Table VI: Honours units of study in chapter 3.

Abandoning and discontinuing

Students may abandon the combined degree course and elect to complete either a BSc or a BEd in accordance with the Resolutions governing those degrees.

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Supervision

Students will be under the general supervision of the Faculty of Education.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Bachelor of Liberal Studies (BLibStud)

Degree Code: AH010

Note that this degree is adminstered by the Faculty of Arts

Summary of requirements

In the Bachelor of Liberal Studies students will undertake a broad liberal education which emphasises communication and problem-solving skills. The degree is available in three streams - the Bachelor of Liberal Studies, Bachelor of Liberal Studies(Advanced) and the Bachelor of Liberal Studies (International). The Faculties of Arts and Science jointly administer the degree.

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Enrolment guide

B Liberal Studies
To qualify for the award of the degree a student shall complete units of study having a total value of at least 192 credit points, including:

- at least 120 Intermediate or Senior credit points;
- at least one Arts major and one Science major;
- at least 28 credit points, including 16 Intermediate or Senior credit points, from units of study in one language subject area other than English from Part A of the Tables of units of study for the degree of Bachelor of Arts;
- a 6 credit point unit of study in communication and analytical skills or in other academic skills as may be prescribed from time to time (currently ENGL 1000, ENGL 1005 and LNGS 1005); and
- a minimum of 6 credit points from units of study in Mathematics and Statistics.

You should also note the following:

- A maximum of 28 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculties of Arts and Science and in addition to those listed in Part B of the Table of units of study for the Bachelor of Arts.
- All other units of study must come from Part A of the Table of units of study for the Bachelor of Arts or from Table I: Bachelor of Science.

B Liberal Studies (International)
Degree Code: AH030

The requirements for this stream of the degree are the same as those for the BLibStud except that a minimum of 24 credit points (one semester equivalent) of study must be completed at an overseas university while enrolled as an exchange student as part of The University of Sydney Exchange Program. The Exchange Program is usually undertaken in the second or third year of enrolment, and students will comply with the rules of, and be under the administration of, the Exchange Program during the period of exchange. To qualify for participation in the Exchange Program a student must have completed at least 48 credit points towards the BLibStud and have an average mark of 65 or greater over all units of study completed.

During the period of their exchange program a student must be enrolled as a full-time student in the Bachelor of Liberal Studies (International) at The University of Sydney and take classes at the overseas university that will qualify for a minimum of 24 credit points per semester towards the Bachelor of Liberal Studies (International) degree.

Under the Exchange program a student's academic fees are covered by normal HECs arrangements based on their enrolment at The University of Sydney. However, students are responsible for their own travel and living expenses during the Exchange Program. The Faculties of Arts and Science will provide a number of travel grants each year on a competitive basis, which assist towards students' travel costs, and students are also eligible to apply for the scholarships and bursaries provided by the University as part of the Exchange Program.

B Liberal Studies (Advanced)
To qualify for the award of the pass degree in the Bachelor of Liberal Studies (Advanced) stream, in addition to the requirements for the Bachelor of Liberal Studies degree a student must complete one of the following two patterns of enrolment. Either (1) from units in the Faculty of Science at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units, at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area; and maintain a credit average across all units of study attempted in each calendar year OR (2) from units in the Faculty of Arts a minimum of 32 credit points and a maximum of 64 credit points in total from designated 'Advanced' units of study, a maximum of 32 credit points from 'Advanced' units of study from any one subject area, and maintain a credit average across all units of study attempted in each calendar year.

Candidates who fail to maintain the required credit average will be transferred to candidature for the Bachelor of Liberal Studies degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Liberal Studies (Advanced) candidates. Candidates who fail to achieve a credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Liberal Studies.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. See the Bachelor of Science entry for information about each Science major and recommended first year combinations of units of study. There is a sample degree program below and a degree planner inside the back cover. Consultation with an adviser from the Faculty of Arts and/or Science is always recommended. Each Faculty has an Associate Dean responsible for Liberal Studies.

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables. The Arts units of study available for this degree are set out in Part A of the table of undergraduate units of study in the Faculty of Arts handbook. You may also wish to refer to the handbooks of other faculties as the degree resolutions allow.

Honours

There will be honours courses in all Arts and Science subject areas. To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in Part A of the Table of undergraduate units of study for the Bachelor of Arts or in Table VI: Honours units of study. You may also wish to refer to 'Honours in the Faculty of Science' in this chapter, and Table VI: Honours units of study in chapter 3.

Transfer to the Bachelor of Arts or the Bachelor of Science

Students who at the end of at least four semesters of candidature have completed at least 96 credit points in total, and who intend to satisfy the requirements for entry to a Fourth Year Honours unit of study or joint Honours unit of study for the Bachelor's degrees in Arts or Science, may apply to transfer to candidature for one of these degrees.

Students who at the end of at least six semesters of candidature have completed units of study which correspond to the entry requirements for Fourth Year Honours for the Bachelor's degrees in Arts or Science may apply to transfer to candidature for one of these degrees.

Students for the degree may, with the permission of the Faculty concerned, transfer to candidature for the pass degrees of Bachelor of Arts or Bachelor of Science no later than the end of the fourth semester of candidature.

If a student has completed the normal requirements for the pass degree of Bachelor of Arts, Bachelor of Arts (Asian Studies) or Bachelor of Science, he or she may apply to take one of these degrees provided that candidature for the Bachelor of Liberal Studies is abandoned.

Transfer between the BLibStud and the BLibStud (International)

Students who have completed at least 48 credit points may be permitted with the permission of the Deans of Arts and Science to transfer from the Bachelor of Liberal Studies to the Bachelor of Liberal Studies (International) stream if:

(1) their marks averaged over all attempted units of study is 75 or greater, and
(2) they are able to qualify for participation in the Exchange Program.

Students enrolled in the Bachelor of Liberal Studies (International) stream who do not qualify for, or are unable or unwilling to participate in an Exchange Program may, with the permission of the Deans of Arts and Science, transfer to the Bachelor of Liberal Studies.

Transfer between the BLibStud and the BLibStud (Advanced)

Students who have completed at least 48 credit points may be permitted to transfer from the Bachelor of Liberal Studies to the Bachelor of Liberal Studies (Advanced) stream if their mark averaged over all attempted units of study is 75 or greater; and they are able to enrol in the required number of Advanced level units or TSP units.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Supervision

From 2005, this degree will be supervised by the Faculty of Arts only.

Universities Admissions Index (UAI)

The minimum UAI for admission to the course varies from year to year.

Degree Resolutions

See chapter 5.

Sample Bachelor of Liberal Studies

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	Science Junior elective A	Arts/Science Junior elective B	Language Junior elective	Maths or ENGL 1000/1005 or LNGS 1005			
		6	6	6	6			24
	2	Science Junior elective A	Arts/Science Junior elective B	Language Junior elective	Maths or ENGL 1000/1005 or LNGS 1005			
		6	6	6	6			24
Year 2	1	Science major Intermediate elective	Arts/Science Junior elective	Language Intermediate elective	Intermediate/Senior elective			
		6	6	6	6			24
	2	Science major Intermediate elective	Arts/Science Junior elective	Language Intermediate elective	Intermediate/Senior elective			
		6	6	6	6			24
Year 3	1	Science major Senior elective	Science major Senior elective	Arts major Senior elective	Intermediate/Senior elective			
		6	6	6	6			24
	2	Science major Senior elective	Science major Senior elective	Arts major Senior elective	Intermediate/Senior elective			
		6	6	6	6			24
Year 4	1	Arts/Science Intermediate/Senior elective	Intermediate/Senior elective	Arts major Senior elective	Arts major Senior elective			
		6	6	6	6			24
	2	Arts/Science Intermediate/Senior elective	Intermediate/Senior elective	Arts major Senior elective	Arts major Senior elective			
		6	6	6	6			24
							Total credit points:	192

Require: 192cp total, min. 120cp Intermediate and/or Senior, one Arts major and one Science major, min. 28cp non-English language incl. min. 16cp Intermediate and/or Senior, min. 6cp Mathematics and Statistics, 6cp communication skills, max 28cp non Science/Arts.

Bachelor of Computer Science and Technology (BCST)

Degree Code LH012

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points. Students can also consult the School of Information Technologies Web site (http://www.it.usyd.edu.au).

Enrolment guide

There have been major changes to the curriculum in 2005 and in 2006. Transitional arrangements will be made to enable current students to complete the requirements of the BCST under the rules listed below. These transitional arrangements will be explained in full on the School of Information Technologies web site (http ://www. it.usy d. edu. au/).

Students should consult this web site to assist them in selecting their units.

To complete your degree you must gain credit for at least 144 credit points. The 144 credit points required for the degree must include:

- at least 90 credit points from Table III associated with the degree of Bachelor of Information Technology, including:
- (a) at least 24 credit points from III (i);
- (b) at least 36 credit points from III (iv) and/or III (v);
- (c) at least 6 credit points from III (v);
- at least 18 credit points from the Science subject areas of Mathematics and Statistics;
- at least 36 credit points from units of study which have codes starting other than INFO, COMP, ISYS, MULT, NETS, SOFT;
- at most 72 credit points from Junior units of study.

You should also note the following:

- you can complete majors in Principles of Computer Science, Information Systems, Multimedia Technology, Networks and Systems, Software Development, Digital Design and Computational Science as defined in Table IIIA: Bachelor of Information Technology majors, but it is not necessary to complete a major in order to qualify for the degree
- 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 may be credited towards the course requirements
- a standard full-time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part-time
- you may not enrol in more than 30 credit points in any one semester without permission
- before being permitted to enrol in a unit of study, you have to meet any prerequisites and corequisites for that unit of study
- Advanced units of study are indicated by a 9 (or 8) as the second digit of the unit of study code. Entry to these units of study is limited (details can be obtained from departments)
- once the award course requirements of 144 credit points have been satisfied a student may not enrol in additional units of study without first obtaining permission from the Dean
- if a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Plans of units of study

It is important when choosing units of study at any stage of your university career that you should consider your overall degree program. The BCST is designed as a flexible degree program which enables students with a strong interest in computing to combine a core of fundamental computer science topics with a wide range of subjects in other computationally based disciplines. There is a sample degree program above and there is also a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The units of study available for this degree are set out in Table III: Bachelor of Information Technology and in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables.

Honours

There will be honours in the subject areas of Computer Science and Information Systems. Please refer to 'Honours in the Faculty of Science' in this chapter, and Table VI: Honours units of study in chapter 3.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications for special consideration should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring into the BCST

Students may transfer from the Bachelor of Computer Science and Technology (Advanced) or the Bachelor of Information Technology into the Bachelor of Computer Science and Technology with the permission of the Dean.

Universities Admissions Index (UAI)

The minimum UAI for admission to the Faculty varies from year to year.

Degree resolutions

See chapter 5.

Sample Bachelor of Computer Science & Technology								
	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Year 1	1	MATH 1XXX	MATH 1XXX	SOFT 1X01	Elective	Elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	SOFT 1X02	Elective	Elective		
		3	3	6	6	6		24
Year 2	1	INFO 2X10	Table Ill(ii) elective	MATH elective	Table III (ii/iii) IT-related elective			
		6	6	6	6			24
	2	SOFT 2X30	Table Ill(ii) elective	Table III (ii/iii) IT-related elective	Table III (ii/iii) IT-related elective			
		6	6	6	6			24
Year 3	1	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective			
		6	6	6	6			24
	2	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(v) Project			
		6	6	6	6			24
							Total credit points:	144

Require: 144cp total, min. 90cp Table III, max. 72 Junior, min. 18cp Maths, min. 24cp Table III(i), min. 36cp Table Hl(iv), min. 6cp Table III(v), min 36cp from units other than COMP, INFO, ISYS, MULT, NETS, SOFT.

Bachelor of Computer Science and Technology (Advanced)

Summary of requirements

The Bachelor Computer Science and Technology (Advanced) degree program requires the equivalent of three years of full time study. An Honours program is available and requires the equivalent of a further year of full time study. The Resolutions of the Senate and Faculty governing candidature for the degree of Bachelor of Computer Science and Technology listed in chapter 5 also govern the BCST (Advanced) degree program

Enrolment guide

There have been major changes to the curriculum in 2005 and for 2006. Transitional arrangements will be made to enable current students to complete the requirements of the BCST (Adv) under the rules listed below. These transitional arrangements will be explained in full on the School of Information Technologies web site (http ://www.it.usyd. edu.au/).

Students should consult this web site to assist them in selecting their units.

To complete your degree you must satisfy the requirements outlined for the BCST and gain credit for at least 144 credit points. The 144 credit points required for the degree must include:

- at least 12 credit points of Intermediate units of study from Table III (i) and/or III (ii) at either the Advanced level or as TSP units
- at least 48 credit points of Senior units of study of which at least 24 are completed at the Advanced level or as TSP units taken from Table III (iv) and/or III (v)

Progression requirements

In order to enrol in the necessary number of Advanced units of study specified, students must achieve at least a Distinction result in the prerequisite units of study.

Universities Admissions Index (UAI)

The minimum UAI for admission to the Faculty varies from year to year.

Transferring into the BCST (Advanced) degree program

Students who have completed at least 48 credit points may be permitted to transfer to the BCST (Advanced) from the BCST or BIT if their mark averaged over all attempted units of study is 75 or greater, and they are able to enrol in the required number of advanced level units or TSP units.

Degree resolutions

See chapter 5.

Bachelor of Information Technology (BIT)

Degree Code LH023

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points. Students can also consult the School of Information Technologies web site (http://www.it.usyd.edu.au).

Enrolment guide

There have been major changes to the curriculum in 2005 and for 2006. Transitional arrangements will be made to enable current students to complete the requirements of the BIT under the rules listed below. These transitional arrangements will be explained in full on the School of Information Technologies web site (http ://www. it.usy d. edu. au/).

Students should consult this web site to assist them in selecting their units.

To complete your degree you must gain credit for at least 192 credit points. The 192 credit points required for the degree must include:

- at least 144 credit points from Table III: Bachelor of Information Technology (in chapter 3), including
- (a) at least 24 credit points from III (i) with average results of Credit or better
- (c) at least 72 credit points from III (iv) and/or III (v)
- (d) either INFO3600 or INFO (4991 or 4992)
- at least 18 credit points are from the Science subject areas of Mathematics and/or Statistics
- at least 36 credit points are from units which have codes starting other than INFO, COMP, ISYS, MULT, NETS, SOFT
- at most 72 credit points from Junior units
- at least 84 credit points from Senior and/or Honours units

You should also note the following:

- you can complete majors in: Principles of Computer Science, Information Systems, Multimedia Technology, Networks and Systems, Software Development, Digital Design, Language Technology and Computational Science as defined in Table IIIA: Bachelor of Information Technology majors, but it is not necessary to complete a major in order to qualify for the degree
- you cannot count any unit of study with the grade Pass (Concessional) toward the degree
- 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 may be credited towards the course requirements
- a standard full time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part time
- you may not enrol in more than 30 credit points in any one semester without permission
- in order to enrol in a unit of study, you have to meet any prerequisites and corequisites for that unit of study
- Advanced units of study are indicated by a 9 (or 8) as the second digit of the unit of study code. Entry to these units of study is limited (details can be obtained from departments)
- once the award course requirements of 192 credit points have been satisfied a student may not enrol in additional units of study without first obtaining permission from the Dean
- if a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Plans of studv

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below and there is also a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The units of study available for this degree are set out in Table III: Bachelor of Information Technology and in Table I: Bachelor of Science, in chapter 3 unit of study descriptions follow the tables.

Honours

The BIT may be awarded as an Honours degree. Students may enrol in the Honours course after completion of 144 credit point, if they meet the specified performance conditions. Please refer to 'Honours in the Faculty of Science' in this chapter, and Table VI: Honours units of study in chapter 3.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications for special consideration should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring into the BIT

Students who have completed at least 48 credit points may be permitted to transfer to the Bachelor of Information Technology degree from other degree programs, if their mark averaged over all attempted units of study is 70 or greater. A quota may apply to the number of students allowed to transfer into the BIT in a given calendar year.

Universities Admissions Index (UAI)

The minimum UAI for admission to the Faculty varies from year to year.

Degree resolutions

See chapter 5.

Sample Bachelor of Information Technology

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	MATH 1XXX	MATH 1XXX	SOFT 1X01	Table III (iii/iv) IT related elective	Elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	SOFT 1X02	Table III (iii/iv) IT related elective	Elective		
		3	3	6	6	6		24
Year 2	1	INFO 2X10	Table Ill(ii) elect-ive	Table III (iii/iv) IT-related elective	MATH elective			
		6	6	6	6			24
	2	SOFT 2X30	Table IH(ii) elect-ive	Table III (iii/iv) IT-related elective	Elective			
		6	6	6	6			24
Year 3	1	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective			
		6	6	6	6			24
	2	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective			
		6	6	6	6			24
Year 4	1	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective			
		6	6	6	6			24
	2	Table III(iv/v) elective	Table III(iv/v) elective	INFO 3600/INFO 4992				
		6	6	12				24
							Total credit points:	192

Require: 192cp total, min. 144cp Table III, max. 72cp Junior, min. 84cp Senior/Honours, min. 18cp Maths, min. 24cp Table III(i), min. 72cp Table III(iv/v), either INFO3600 or INFO (4991 or 4992), min. 36cp from units other than COMP, INFO, ISYS, MULT, NETS, SOFT.

Bachelor of Medical Science (BMedSc)

Degree Code: LH010

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Enrolment guide

To complete your degree you must gain credit for at least 144 credit points. The 144 credit points required for the degree must include:

- at least 48 credit points from Junior units of study, comprising MBLG1001 and 12 credit points each from Chemistry, Mathematics and Physics or Computational Science and 6 credit points from Biology;
- no more than 60 credit points from Junior units of study;
- 48 credit points of Intermediate core units of study listed in Table IV;
- at least 36 credit points of Senior units of study taken from the subject areas of Anatomy/Histology, Biology (Genetics), Biochemistry, Cell Pathology, Immunology, Infectious Diseases, Microbiology, Pharmacology and Physiology;
- no more than 12 credit points from units of study other than core units of study.

Students are required to have completed at least 32 credit points of the core Intermediate units of study prior to enrolment in any Senior units of study. It is possible for students to 'carry' up to 8 credit points of core or elective units from the Intermediate year into the Senior year, provided that these units of study are not prerequisites for electives they may wish to undertake in the Senior Year.

You should also note the following:

- you cannot count any unit of study with the grade Pass (Concessional) toward the degree
- 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 may be credited towards the course requirements
- a standard full time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part time
- you may not enrol in more than 30 credit points in any one semester without permission
- in order to enrol in a unit of study, you have to meet any prerequisites and corequisites for that unit of study
- Advanced units of study are indicated by a 9 (or 8) as the second digit of the unit of study code. Entry to these units of study is limited (details can be obtained from departments)
- once the award course requirements of 144 credit points have been satisfied a student may not enrol in additional units of study without first obtaining permission from the Dean
- if a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.
- The combination MATH 1003 and 1004 or 1903 and 1904 is not recommended in this degree. Students wishing to study Statistics/Calculus are advised to select from MATH 1003,1005, 1903, 1905, 1013, 1015.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below and there is also a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table IV: Bachelor of Medical Science and in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables.

Honours

There will be Honours courses in Anatomy, Biochemistry, Biology (Genetics), Cell Pathology, Histology and Embryology, Immunology, Infectious Diseases, Microbiology, Pharmacology and Physiology. Please refer to 'Honours in the Faculty of Science' in this chapter, and Table VI: Honours units of study in chapter 3.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring into the BMedSc degree program

A limited number of students may be permitted to transfer into the BMedSc course at the beginning of the Intermediate year from other degrees offered by the Faculty, from other degrees offered by The University of Sydney or from other institutions. In order to transfer students must achieve a Pass or better in all of the qualifying units of study, or units of study deemed equivalent by the Faculty. Selection is based solely on performance in the first year subjects. Applicants should anticipate a WAM of about 75 would be necessary to gain admission. Students who wish to transfer must apply for admission to the BMedSc course through the Universities Admission Centre.

Universities Admissions Index (UAI)

The minimum UAI for admission to the course varies from year to year.

BMedSc degree resolutions

See chapter 5.

Sample Bachelor of Medical Science

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	MATH 1XXX	MATH 1XXX	CHEM 1XXX	PHYS1XXX	BIOL 1XXX		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	CHEM 1XXX	PHYS1XXX	MBLG 1001		
		3	3	6	6	6		24
Year 2	1	BMED2801	BMED 2802	BMED 2803	BMED 2806			
		6	6	6	6			24
	2	BMED 2804	BMED 2805	BMED 2807	BMED 2808			
		6	6	6	6			24
Year 3	1	Senior core 3XXX	Senior core 3XXX	Senior core 3XXX	Senior core 3XXX or elective			
		6	6	6	6			24
	2	Senior core 3XXX	Senior core 3XXX	Senior core 3XXX	Senior core 3XXX or elective			
		6	6	6	6			24
							Total credit points:	144

Require: 144cp total, minL 48cp Junior, minL 48cp Intermediate core, min 36cp Senior core, no more than 12cp from units of study outside Table V.

Combined Engineering/Medical Science degrees

Degree Code HH021

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates.

A student may proceed concurrently to the degrees of Bachelor of Engineering (in any specialisation except Civil Engineering) and Bachelor of Medical Science.

Enrolment guide

To qualify for the award of the pass degrees a student shall complete units of study to a total value of at least 240 credit points including:

- at least 160 credit points from prescribed Engineering units of study (this total to include the 12 credit points from the Interdisciplinary Thesis)
- 48 credit points of Intermediate core units of study listed in Table IV: Bachelor of Medical Science
- at least 24 credit points of Senior units of study from the subject areas listed in Table IV: Bachelor of Medical Science
- 12 credit points from the Interdisciplinary Thesis.

Students who are so qualified may be awarded honours in the BE degree or undertake an honours course in the BMedSc degree.

* You cannot count any unit of study with the grade Pass (Concessional) toward the degree

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. See the Bachelor of Medical Science entry for information about recommended first year combinations of units of study and the sample degree program. There is a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table IV: Bachelor of Medical Science in chapter 3. Unit descriptions follow the tables. The Engineering units of study available for this degree are set out in the Faculty of Engineering handbook.

Pass (Concessional)

Pass (Concessional) will no longer be awarded by the Faculty of Science from 2004.

Abandoning and discontinuing

Students may abandon the combined degree course and elect to complete either a BMedSc or a BE in accordance with the Resolutions governing those degrees.

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Supervision

Students will be under the general supervision of the Faculty of Engineering.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Combined Science/Medicine degrees

Degree Codes: LH033/LH034

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates.

A student may proceed through the degree of Bachelor of Science (Advanced) or the Bachelor of Medical Science to the degrees of Bachelor of Medicine and Bachelor of Surgery.

Enrolment guide

To qualify for the award of the degrees a student shall complete units of study to a total value of at least 336 credit points including:

- maintain a AAM of 80 or above in each of the first three years of the program;
- satisfactorily complete five SMTP units in the first three years of the program;
- meet the requirements of the BSc (Adv) or BMedSc degree outlined above; and
- complete 192 credit points towards the MBBS degree as required by the Resolutions of the Faculty of Medicine.

Progression Requirements

Students are required to maintain a minimum AAM of 80 or above and to satisfactorily complete five SMTP units of study in the first three years of the program. Students who fail to satisfy these requirements will be transferred to the BSc (Adv) or BMedSc.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. See the Bachelor of Science (Advanced) or Bachelor of Medical Science entry for information about recommended first year combinations of units of study and the sample degree program. There is a degree planner inside the back cover. Consultation with a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table I: Bachelor of Science and Table IV: Bachelor of Medical Science in chapter 3. Unit descriptions follow the tables. The Medicine units of study available for this degree are set out in the Faculty of Medicine handbook.

Honours

Students who qualify to undertake Honours in the BSc (Adv) or BMedSc degree may elect to do so by either suspending their candidature from the MBBS degree for one year, or after completion of the combined course. Please refer to 'Honours in the Faculty of Science' in this chapter, and to Table VI: Honours units of study in chapter 3.

Abandoning and discontinuing

Students may abandon the combined degree course and elect to complete the BSc (Adv) or BMedSc degree.

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Supervision

Students will be under the general supervision of the Faculty of Science until the end of the semester in which they complete the requirements for the BSc (Adv) or BMedSc degree. After that they will be under the general supervision of the Faculty of Medicine.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Bachelor of Science in Media and Communications (BScMediaCommun)

Degree Code: LH024

New enrolments in the Bachelor of Science in Media and Communications will not be possible after 2004. Students who are already enrolled in this course should refer to the resolutions for the degree in the 2004 Science Handbook.

The units of study available for this degree are set out in Table V: Bachelor of Science in Media and Communications (refer to 2004 Science Handbook) and the Science units of study are set out in Table I: Bachelor of Science in chapter 3. Unit descriptions follow the tables. You may also wish to refer to the handbooks of other faculties for details of other units of study, as allowed by the degree resolutions.

Bachelor of Psychology (BPsych)

Degree Code: LH013

Summary of requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Enrolment guide

To complete your degree you must gain credit for at least 192 credit points including completing the honours course in Psychology and maintaining the required average grade in each year of study in the Science Subject Area of Psychology. The 192 credit points required for the degree must include:

- at least 12 credit points of Junior Psychology units of study at an average grade of Credit or better
- at least 12 credit points of units of study in the Science Subject Areas of Mathematics and Statistics
- at least 12 credit points are Junior units of study from Science Subject Areas other than Psychology and Mathematics and Statistics
- 24 credit points from Intermediate units of study in the science subject area of Psychology at an average grade of Distinction or better. At least 24 creit points from Senior units of study in the Science subject area of Psychology* which must include PSYC (3201 or 3010), and at least one of PSYC 3011, 3012, 3013 and 3014 with an average grade of Distinction or better.
- *HPSC3023 be included as a Senior unit within the 24 senior credit points and is required by student who wish to complete the theoretical thesis option in Psychology Honours.
- at least 96 credit points from Science Subject Areas
- 48 credit points of Honours Psychology units of study with a grade of Honours (H3 or better)

You should also note the following:

- no more than 18 credit points may be counted from units in which a grade of Pass (Concessional) has been awarded. Note: Pass (Concessional) will no longer be awarded by the Faculty of Science from 2004.
- a maximum of 48 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculty of Science.
- 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 may be credited towards the course requirements.
- a standard full time enrolment is 24 credit points per semester; less than 18 credit points per semester is considered to be part time.
- you may not enrol in more than 30 credit points in any one semester without permission.
- you may not enrol in more than 60 credit points of Junior units of study.
- before being admitted to enrol in a unit of study, you have to meet any prerequisites and corequisites for that unit of study
- once the award course requirements of 192 credit points have been satisfied a student may not enrol in additional units of study without first obtaining permission from the Dean.
- if a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Progression requirements

A minimum requirement for progression in the BPsych is as follows:

- Credit average in Junior Psychology units of study
- Distinction average in Intermediate and Senior Psychology units of study.

A student who fails to meet progression requirements will be transferred to the BSc.

A student may not enrol in Psychology Honours until they have completed 144 credit points of units of study and have satisfied all requirements for the BPsych except those related to Honours.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program below and there is also a degree planner inside the back cover. Consultation with a Faculty or School adviser is always recommended.

Units of study

Units of study for the BPsych are listed in Table I: Bachelor of Science.

Honours

Students shall complete the requirements for the honours course full-time over two consecutive semesters. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters. A student may not re-attempt the Psychology honours course. Please refer to "Honours in the Faculty of Scienc" in this chapter, and Table VI: Honours units of study in chapter 3.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Transferring into the BPsych

Students may transfer from any degree into the BPsych with the permission of the Dean provided that they have completed at least 48 cps and have obtained a High Distinction average in at least 12 credit points of Junior Psychology units of study.

Universities Admission Index (UAI)

The minimum UAI for admission to the course varies from year to year.

Degree Resolutions

See chapter 5.

Sample Bachelor of Psychology

	Sem	Unit of study 1 & credit points	Unit of study 2 & credit points	Unit of study 3 & credit points	Unit of study 4 & credit points	Unit of study 5 & credit points	Unit of study 6 & credit points	Total
Yearl	1	PSYC 1001	MATH 1XXX	MATH 1XXX	Science elective 1XXX	Elective		
		3	3	6	6	6		24
	2	PSYC 10021	MATH 1XXX	MATH 1XXX	Science elective 1XXX	Elective		
		3	3	6	6	6		24
Year 2	1	PSYC 2011	PSYC 2012	Science elective	Elective			
		6	6	6	6			24
	2	PSYC 2013	PSYC 2014	Science elective	Elective			
		6	6	6	6			24
Year 3	1	PSYC 3XXX	PSYC 3XXX	PSYC 3XXX	PSYC 3XXX or elective			
		6	6	6	6			24
	2	PSYC 3010	PSYC 3XXX	PSYC 3XXX or elective	PSYC 3XXX or elective			
		6	6	6	6			24
Year 4	1	PSYC 4011	PSYC 4012					
		12	12					24
	2	PSYC 4013	PSYC 4014					
		12	12					24
							Total credit points:	192

Require: 192cp total, min. 12 cp Junior Psychology, min. 24cp Intermediate Psychology, min. 30cp Senior Psychology (incl. PSYC3010 and at least one of PSYC 3011, 3012, 3013, 3014), min. 48cp Honours Psychology, min. 12cp Maths, max 60cp Junior.

Bachelor of Science and Technology (BST)

Degree Code: LH035

Summary of Requirements

The requirements for the degree are set out in the Senate and Faculty Resolutions (see Chapter 5) which should be read by all intending candidates. In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points.

Enrolment Guide

In your Junior year, you should complete:

- 12 credit points from the Science subject areas of Mathematics and Statistics;
- 12 credit points of Junior units of study from the subject areas of Technology/Applied Science (from Table VIIc);
- 12 credit points of Junior units of study from the subject areas of Experimental Science (from Table Vila);
- 12 credit points of Junior units of study from Science, Engineering or Architecture.

To complete your degree you must gain credit for at least 144 credit points, comprising:

- a minimum of 12 credit points in the subject area of Mathematics and Statistics;
- a minimum of 12 credit points in Experimental Science units of study from those specified in Table Vila;
- a minimum of 12 credit points in Science/Technology associated Humanities and Social Sciences units of study from those specified in Table Vllb;
- a minimum of 12 credit points in Technology/Applied Science units of study from those specified in Table VIIc;
- a minimum of 72 credit points in senior or intermediate units of study, or in units of study normally taken at second or third year level or higher;
- a major, as specified in Table I of the Bachelor of Science, or as listed in Table Vlld. A major in the BST requires a minimum of 36 credit points at intermediate (2000) and senior (3000) levels, including a minimum of 12 credit points at senior level, except in the case of a major in a Science subject area, which normally requires the completion of 24 credit points of senior-level units of study, in addition to any other units of study specified in the table as compulsory for that major.

Plans of study

It is important when choosing units of study at any stage of your university career that you consider your overall degree program. There is a sample degree program in this section. See the Bachelor of Science entry for information about majors. Consultation with the degree coordinator or a Faculty adviser is always recommended.

Units of study

The Science units of study available for this degree are set out in Table VII: Bachelor of Science and Technology, and in Table 1: Bachelor of Science, in chapter 3. Unit of study descriptions follow the tables.

Honours

There are Honours courses in the following subject areas:
Agricultural Chemistry
Anatomy and Histology
Biochemistry
Biology
Cell Pathology
Chemistry
Computational Science
Computer Science
Environmental Studies
Geography
Geology and Geophysics
History and Philosophy of Science
Immunobiology
Information Systems
Marine Science
Mathematics
Medicinal Chemistry
Microbiology
Nanoscience and Technology
Neuroscience
Pharmacology
Physics
Physiology
Psychology
Soil Science
Statistics

Students should note that Honours is not available in the following subject areas: Design Technology, Electronic Engineering, General Engineering, and
Information Technology. Please refer to "Honours in the Faculty of Science" in this chapter, and Table VI: Honours units of study in chapter 3.

Discontinuation

If you wish to discontinue a unit of study it is important to talk to staff in the Faculty Office. In some circumstances, discontinuation can affect your access to units of study, prizes and scholarships. Deadlines for withdrawal and discontinuation can be found on the second page of this handbook.

Special permission

You should note that the Faculty can, in certain circumstances, permit exceptions to the normal requirements for a degree. Applications should be made in writing to the Associate Dean (Undergraduate) after discussion with staff in the Faculty Office.

Universities Admissions Index (UAI)

The minimum UAI for admission into the course varies from year to year.

Degree resolutions

See chapter 5.

Sample Bachelor of Science and Technology

	Sem	Unit of Study 1 & credit points	Unit of Study 2 & credit points	Unit of Study 3 & credit points	Unit of Study 4 & credit points	Unit of Study 5 & credit points	Total
Yearl	1	MATH1XXX (3cp) or MATH	MATH1XXX (3cp) 1111 (6cp)	Tech/Appl Sci (Table VIIc) (6cp)	Expmtl Sci (Table Vila) (6cp)	Elective* (6cp)	24
	2	MATH1XXX (3cp)	MATH1XXX (3cp)	Tech/Appl Sci (Table VIIc) (6cp)	Expmtl Sci (Table Vila) (6cp)	Elective *(6cp)	24
Year 2	1	Humanities UoS (Table 1 Vllb) (6cp)	Major 1 (Table Vllb) (6cp)	Major 1 or 2, or elective (6cp)	Major lor 2, or elective (6cp)		24
	2	Humanities UoS (Table Vllb) (6cp)	Major 1 (Table Vllb) (6cp)	Major lor 2, or elective (6cp)	Major lor 2, or elective (6cp)		24
Year 3	1	Major 1 (6cp)	Major 2 (6cp)	Major 2 (6cp)	Elective (6cp)		24
	2	Major 1 (6cp)	Major 2 (6cp)	Major 2 (6cp)	Elective (6cp)		24
						Total	144

* Students intending to major in a Science subject area should enrol in the appropriate junior level of units of study. For more information, refer to the Faculty of Science Handbook, Chapter 2: Enrolment Guide by Major for the Bachelor of Science degree (pp 10-13)

Enrolment guide by major

The following is a list of recommended combinations of Junior units of study if you are intending to complete a major in a non-Science subject area.

Majors in Science Subject Areas

12 credit points of Junior units of study in Mathematics +12 credit points Applied Technology from Table VIIc + at least 12 credit points of Experimental Science from Table 1+12 credit points of other Science units of study as required to progress to major(s) of choice. Students should also consult the 'Enrolment Guide by Major' for the Bachelor of Science in chapter 2 of this handbook for the recommended combinations of Junior units of study for a major in a Science subject area. Consultation with an academic adviser is also recommended.

Design Technology

12 credit points of Junior units of study in Mathematics +12 credit points INFO 1003 and SOFT 1001 + 12 credit points of Experimental Science from Table I (except Mathematics and Statistics, Computer Science, Computational Science, History and Philosophy of Science and Information Systems) +12 credit points Applied Technology electives of your choice from Table VIIc. Instead of 12 credit points INFO 1003 and SOFT 1001 + 12 credit points Applied Technology electives from Table VIIc, students may choose 24 credit points DECOl 100 and DECO1200 from Table VIIc. Note: students who wish to undertake a sequence of units of study in 3D Animation should take DECOl 007 and DECOl 008 in place of INFO 1003 and SOFT 1001 in their first year of studies.

Electronic Engineering

12 credit points of Junior units of study in Mathematics +12 credit points of ELEC1601 and ELEC1103 + 12 credit points of Experimental Science from Table I (except Mathematics and Statistics, Computer Science, Computational Science, History and Philosophy of Science and Information Systems) +12 credit points Applied Technology electives of your choice from units of study offered by the Faculties of Science, Architecture, Engineering and Agriculture, Food and Natural Resources.

General Engineering

12 credit points of Junior units of study in Mathematics +12 credit points of ENGG1800 andENGG1803 + 12 credit points of Experimental Science from Table I (except Mathematics and Statistics, Computer Science, Computational Science, History and Philosophy of Science and Information Systems) +12 credit points of Applied Technology electives of your choice from units of study offered by the Faculties of Science, Architecture, Engineering and Agriculture, Food and Natural Resources.

Information Technology

12 credit points of Junior units of study in Mathematics +12 credit points of SOFT1001 and SOFT1002 + 12 credit points of Experimental Science from Table I (except Mathematics and Statistics, Computer Science, Computational Science, History and Philosophy of Science and Information Systems) +12 credit points of Applied Technology electives of your choice from Table 1 or Table VII.

Honours in the Faculty of Science

Honours in the BSc (Including all streams and combined degrees), BCST, BMedSc, BST

Admission

To qualify to enrol in an honours course, students shall:

1. (a) have qualified for the award of a relevant pass degree from the Faculty of Science, or
1. (b) be a pass graduate of the Faculty of Science, or
2. (c) be a pass graduate holding an equivalent qualification from another institution
3. have completed a minimum of 24 credit points of Senior units of study relating to the intended honours course (or equivalent at another institution)
4. have achieved either
4. (a) a credit average in the relevant Senior units of study, or
5. (b) a SCIWAM of at least 60 (or equivalent at another institution)
6. satisfy any additional criteria set by the Head of Department concerned.

You should also note the following:

- Students shall complete the requirements for the honours course full-time over two consecutive semesters. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters. Not all Departments offer students part time enrolment in honours, or honours enrolment commencing in the July semester. Students considering these types of honours enrolment are urged to contact the Department concerned.
- A student may not re-attempt an honours course in a single subject area. A student who is qualified to enrol in two honours courses may either complete the honours courses in the two subject areas separately and in succession, or complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.
- An interdisciplinary honours course shall comprise such parts as determined by the Coordinating Committee for the interdisciplinary course

Honours in the BIT

Admission

To qualify to transfer into the Bachelor of Information Technology (Honours) degree, students shall:

1. have completed at least 144 credit points from the Bachelor of Information Technology degree;
2. have completed a minimum of 24 credit points from Table III (iv) and/or III (v), or the equivalent at another institution;
3. have achieved either a distinction average (75) in the relevant units of study in Table III (iv) and/or III (v), or a SCIWAM of at least 70;
4. satisfy any additional criteria set by the Head of Department concerned.

To qualify for the award of the Bachelor of Information Technology (Honours) degree, students shall complete 192 credit points as outlined in Section 4 of the Resolutions, including at least 42 credit points from honours-level units, including INFO 4990, INFO 4991, INFO 4992 and INFO 4999, with a result of at least 65 in INFO 4999. However, students who fail to meet the requirements for the award of honours and who have satisfied the requirements of the BIT will graduate with a pass BIT degree.

You should also note the following:

- Students shall complete the requirements for the honours course full-time over two consecutive semesters. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters. Not all Departments offer students part time enrolment in honours, or honours enrolment commencing in the July semester. Students considering these types of honours enrolment are urged to contact the Department concerned.
- A student may not re-attempt an honours course in a single subject area. A student who is qualified to enrol in two honours courses may either complete the honours courses in the two subject areas separately and in succession, or complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.

Honours in the BPsych

Admission

To qualify to enrol in the honours course, students shall have completed 144 credit points as specified in Resolution 5(1) of the BPsych including completion of all Intermediate and Senior units of study in Psychology with an average grade of Distinction or better.

You should also note the following:

- Students shall complete the requirements for the honours course full-time over two consecutive semesters. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of School of Psychology so recommends, permission may be granted to undertake honours half-time over four consecutive semesters. A student may not re-attempt an honours course.

Honours in the BScMediaCommun and BLibStud

Admission

To qualify to enrol in the honours course, students shall

1. (a) have completed the relevant degree with the grade of Credit
1. (b) be a pass graduate holding an equivalent qualification from another institution
2. completed a major at Credit average in the subject area related to the intended honours course
3. satisfy any additional criteria set by the Head or Chair of Department concerned.

You should also note the following:

- Students shall complete the requirements for the honours course full-time over two consecutive semesters. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters. Not all Departments offer students part time enrolment in honours, or honours enrolment commencing in the July semester. Students considering these types of honours enrolment are urged to contact the Department concerned.
- A student may not re-attempt an honours course in a single subject area. A student who is qualified to enrol in two honours courses may either complete the honours courses in the two subject areas separately and in succession, or complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.
- An interdisciplinary honours course shall comprise such parts as determined by the Coordinating Committee for the interdisciplinary course

Grades of Honours for all degrees

To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in the table of honours units of study, as prescribed by the Head of Department concerned (at least 40 credit points of honours-level units of study for the BIT (Hons)).

The grade of honours and the honours mark are determined by performance in the honours course.

The Faculty is aware that, because the honours units of study in some Departments are wholly or predominantly formal course work and in others a research project, and because some subjects are not taught until well into the undergraduate program, the way in which Departments take cognisance of performance in the honours year in arriving

at a recommendation for a grade of honours must be left to their discretion. However the Faculty has established a set of guidelines for Departments to use in determining their recommendations.

The Faculty has adopted the following guidelines for assessment of student performance in honours:

95-100
Outstanding First Class quality of clear Medal standard, demonstrating independent thought throughout, a flair for the subject, comprehensive knowledge of the subject area and a level of achievement similar to that expected by first rate academic journals. This mark reflects an exceptional achievement with a high degree of initiative and self-reliance, considerable student input into the direction of the study, and critical evaluation of the established work in the area.

90-94
Very high standard of work similar to above but overall performance is borderline for award of a Medal. Lower level of performance in certain categories or areas of study above.
Note: In order to qualify for the award of a university medal, it is necessary but not sufficient for a candidate to achieve a SCIWAM of 80 or greater and an honours mark of 90 or greater. Faculty has agreed that more than one medal may be awarded in the subject of an honours course. The relevant Senate Resolution reads: 'A candidate with an outstanding performance in the subject of an honours course shall, if deemed of sufficient merit by the Faculty, receive a bronze medal'. Students with an honours mark of 90 or greater and a SCIWAM of 77 to 79 inclusive may be considered for the award of a university medal only if it can be demonstrated that their WAM was affected by sickness, misadventure, unusual workload or choice of units of study.

80-89
Clear First Class quality, showing a command of the field both broad and deep, with the presentation of some novel insights. Student will have shown a solid foundation of conceptual thought and a breadth of factual knowledge of the discipline, clear familiarity with and ability to use central methodology and experimental practices of the discipline, and clear evidence of some independence of thought in the subject area. Some student input into the direction of the study or development of techniques, and critical discussion of the outcomes.

75-79
Second class honours, first division - student will have shown a command of the theory and practice of the discipline. They will have demonstrated their ability to conduct work at an independent level and complete tasks in a timely manner, and have an adequate understanding of the background factual basis of the subject. Student shows some initiative but is more reliant on other people for ideas and techniques and project is dependent on supervisor's suggestions. Student is dedicated to work and capable of undertaking a higher degree.

70-74
Second class honours, second division - student is proficient in the theory and practice of their discipline but has not developed complete independence of thought, practical mastery or clarity of presentation. Student shows adequate but limited understanding of the topic and has largely followed the direction of the supervisor.

65-69
Third class honours - performance indicates that the student has successfully completed the work, but at a standard barely meeting honours criteria. The student's understanding of the topic is extremely limited and they have shown little or no independence of thought or performance.

SCIWAM for all degrees

SCIWAM means the weighted average mark calculated by the Faculty from the results for all Intermediate and Senior units of study with a weighting of 2 for Intermediate units and 3 for Senior units.

The SCIWAM is calculated by summing the products of the marks achieved and the weighted credit point values of the units of study taken in the degree and then dividing by the sum of the weighted credit point values, with all attempts at units of study being included in the calculation, except where units of study are discontinued with permission; the formula used is:

$$WAM = \frac{\sum (W_c \times M_c)}{\sum W_c}$$

where Wc is the weighted credit point value - ie, the product of the credit point value and level of weighting of 2 for 2000-2999 units of study and 3 for 3000-3999 units of study; where Mc is the mark out of 100 for the unit of study.

In calculating the SCIWAM for a student transferring from another university, units of study are assigned level weightings and credit point values consistent with their equivalent units of study at The University of Sydney. A mark is assigned to each unit of study credited based on the results provided on a validated academic transcript from the university. Where no mark is provided by the institution an appropriate estimate is used. Students are encouraged to obtain actual marks from Departments at those universities that do not issue formal marks.

Ranking for postgraduate scholarships

Ranking for postgraduate scholarships is determined by a combination of the SCIWAM and the Honours mark in the ratio 35:65.

Honours units of study

Honours units of study are listed in Table VI: Honours units of study or in the tables associated with the relevant degree (all tables appear in chapter 3).

Please note that enrolment in Honours requires both Faculty and Departmental permission, and students intending to attempt an Honours year should read the relevant sections of chapters 3 and 5 for further information.

Important policies relating to undergraduate candidature

Restrictions (general)

1. A candidate for a degree must satisfy the minimum eligibility requirements before commencing the degree units of study. Units of study taken before satisfying these requirements cannot normally be counted for degree purposes.
2. A candidate may not take a unit of study in any subject without having previously completed the qualifying unit(s) of study appropriate to that subject. Except with the permission of the Head of Department, he or she must also complete the prerequisites and corequisites as prescribed.
3. The only combinations of units of study available are those permitted by the timetable. A candidate may attend evening units of study if they are available.

Time limits

The Faculty resolved at its meeting on 14 March 1995 that, except with the permission of the Faculty, students must complete the requirements for award of their degree within ten calendar years of admission to candidature. This rule applies to all students who first enrolled in their degree after 1995, and applies from 1998 to students who first enrolled in their degree before 1996.

Suspension

The Faculty resolved at its meeting on 14 March 1995 that all students must re-enrol each calendar year unless the Faculty has approved suspension of candidature. Candidature will lapse if a student has not obtained approval for suspension and does not re-enrol. A student whose candidature has lapsed must be selected for admission again (usually by submitting an application to UAC) before they can re-enrol.

The Faculty also resolved that, except with the prior permission of the Faculty, a student shall not be granted a suspension of candidature in order to enrol in another course of tertiary study. Candidature will lapse if a student enrols in another course of tertiary study after having been granted a suspension of candidature.

Satisfactory progress

If a student fails, absent fails (AF) or discontinues with failure (DF) enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Faculty of Science attendance policy

Students enrolled in courses and units of study under the administration of the Faculty of Science are expected to attend a minimum of 80 per cent of tutorials, seminars and practical sessions etc associated with those courses or units, unless granted exemption by the Dean or Head of the relevant department. The Head of Department may set additional requirements for the minimum number of assessment items such as practical reports, tutorial papers, seminars, essays, exercises, quizzes etc which must be completed. On the recommendation of the relevant Head of Department the Dean may determine that a student fails a unit of study because of inadequate attendance or insufficient assessment items completed.

Credit

The Faculty resolved at its meeting on 14 March 1995 that students who have previously completed studies which are considered by the Faculty to be equivalent to any unit of study listed in the Tables may be given credit for that unit of study providing that the unit of study was completed not more than ten years before admission to candidature in the Faculty.

Examinations and assessment

The Faculty resolved at its meeting on 9 March 1993 that the various forms of assessment of a student's performance in an undergraduate unit of study should include an examination or examinations conducted under University supervision and requiring written answers to unseen questions, provided that the general scope of a supervised examination paper may be made known to students in advance.

Results

For all Junior, Intermediate and Senior units of study in the Bachelor of Science, Bachelor of Liberal Studies, Bachelor of Medical Science, Bachelor of Computer Science and Technology, Bachelor of Information Technology, Bachelor of Science in Media and Communications and Bachelor of Psychology degrees, the following mark ranges apply within the Faculty of Science:

HD	High Distinction	85-100
D	Distinction	75-84
CR	Credit	65-74
P	Pass	50-64
PCON	Pass (Concessional)* Junior units of study only. PCON (Pass Concessional) will no longer be awarded in any degree in the Faculty of Science from 2004	46^19
F	Fail	Below 46 or 50
AF	Absent Fail	
DF	Discontinued - Fail	
DNF	Discontinued - not to count as failure	

*A *maximum of 18 credit points from Junior units of study with the grade of PCON may be counted for all degrees, except BScMediaCommun where the maximum is 12 credit points and BIT and BMedSc where no units with the grade of PCON may be credited. Note: PCON (Pass Concessional) will no longer be awarded in any degree in the Faculty of Science from 2004.*

Honours

For Final Year Honours units of study, the following Honours grades apply from 1999. The grade of Honours is determined by the mark in the final year (Honours) course.

HI	Honours Class I	80+
H21	Honours Class II (Division 1)	75-79
H22	Honours Class II (Division 2)	70-74
H3	Honours Class III	65-69
F	Fail*	below 65
AF	Absent Fail	

**Note that in these cases the award of the Pass degree is recommended.*

Discontinuation and re-enrolment - University of Sydney (Coursework) Rule

Division 5: Discontinuation of enrolment and suspension of candidature

12. Discontinuation of enrolment

(1) A student who wishes to discontinue enrolment in an award course or a unit of study must apply to the relevant dean and will be presumed to have discontinued enrolment from the date of that application, unless evidence is produced showing:
  (a) that the discontinuation occurred at an earlier date; and
  (b) that there was good reason why the application could not be made at the earlier time.

(2) A student who discontinues enrolment during the first year of enrolment in an award course may not re-enrol in that award course unless:
  (a) the relevant dean has granted prior permission to re-enrol; or
  (b) the student is reselected for admission to candidature for that course.

(3) No student may discontinue enrolment in an award course or unit of study after the end of classes in that award course or unit of study, unless he or she produces evidence that:
  (a) the discontinuation occurred at an earlier date; and

(b) there was good reason why the application could not be made at the earlier time.

(4) A discontinuation of enrolment may be recorded as "Withdrawn (W)[M] or "Discontinued Not To Count As Failure (DNF)" where that discontinuation occurs within the time-frames specified by the University and published by the faculty, or where the student meets other conditions as specified by the relevant faculty.

13. Suspension of candidature

(1) A student must be enrolled in each semester in which he or she is actively completing the requirements for the award course. A student who wishes to suspend candidature must first obtain approval from the relevant dean.

(2) The candidature of a student who has not re-enrolled and who has not obtained approval from the dean for suspension will be deemed to have lapsed.

(3) A student whose candidature has lapsed must apply for re-admission in accordance with procedures determined by the relevant faculty.

(4) A student who enrols after suspending candidature shall complete the requirements for the award course under such conditions as determined by the dean.

Restrictions upon re-enrolment- University of Sydney (Coursework) Rule

Division 6: Unsatisfactory progress and exclusion

14. Satisfactory progress

A faculty has authority to determine what constitutes satisfactory progress for all students enrolled in award courses in that faculty, in accordance with the policies and directions of the Academic Board.

15. Requirement to show good cause

(1) For the purposes of this Rule, "good cause" means circumstances beyond the reasonable control of a student, which may include serious ill health or misadventure, but does not include demands of employers, pressure of employment or time devoted to non-University activities, unless these are relevant to serious ill health or misadventure. In all cases the onus is on the student to provide the University with satisfactory evidence to establish good cause. The University may take into account relevant aspects of a student's record in other courses or units of study within the University and relevant aspects of academic studies at other institutions provided that the student presents this information to the University.

(2) The relevant dean may require a student who has not made satisfactory progress to show good cause why he or she should be allowed to re-enrol.

(3) The dean will permit a student who has shown good cause to re-enrol.

16. Exclusion for failure to show good cause

The dean may, where good cause has not been established:

(1) exclude the student from the relevant course; or

(2) permit the student to re-enrol in the relevant award course subject to restrictions on units of study, which may include, but are not restricted to:

(a) completion of a unit or units of study within a specified time;

(b) exclusion from a unit or units of study, provided that the dean must first consult the head of the department responsible for the unit or units of study; and

(c) specification of the earliest date upon which a student may re-enrol in a unit or units of study.

17. Applying for re-admission after exclusion

(1) A student who has been excluded from an award course or from a unit or units of study may apply to the relevant dean for re-admission to the award course or re-enrolment in the unit or units of study concerned after at least four semesters, and that dean may readmit the student to the award course or permit the student to re-enrol in the unit or units of study concerned.

(2) With the written approval of the relevant dean, a student who has been excluded may be given credit for any work completed elsewhere in the University or in another university during a period of exclusion.

18. Appeals against exclusion

(1) In this Rule a reference to the Appeals Committee is a reference to the Senate Student Appeals Committee (Exclusions and Re-admissions).

(2) (a) (i) A student who has been excluded in accordance with this Rule may appeal to the Appeals Committee.

(ii) A student who has applied for re-admission to an award course or re-enrolment in a unit of study after a period of exclusion, and who is refused re-admission or re-enrolment may also apply to the Appeals Committee.

(b) The Appeals Committee shall comprise:

(i) three ex officio members (the Chancellor, the Deputy Chancellor and the Vice-Chancellor and Principal);

(ii) the Chair and Deputy Chairs of the Academic Board;

(iii) two student Fellows; and

(iv) up to four other Fellows.

(c) The Appeals Committee may meet as one or more subcommittees providing that each subcommittee shall include at least one member of each of the categories of:

(i) ex officio member;

(ii) Chair or Deputy Chair of the Academic Board;

(iii) student Fellow; and

(iv) other Fellows.

(d) Three members shall constitute a quorum for a meeting of the Appeals Committee or a subcommittee.

(e) The Appeals Committee and its subcommittees have authority to hear and determine all such appeals and must report its decision to the Senate annually.

(f) The Appeals Committee or a subcommittee may uphold or disallow any appeal and, at its discretion, may determine the earliest date within a maximum of four semesters at which a student who has been excluded shall be permitted to apply to re-enrol.

(g) No appeal shall be determined without granting the student the opportunity to appear in person before the Appeals Committee or subcommittee considering the appeal. A student so appearing may be accompanied by a friend or adviser.

(h) The Appeals Committee or subcommittee may hear the relevant dean but that dean may only be present at those stages at which the student is permitted to be present. Similarly, the dean is entitled to be present when the Committee or subcommittee hears the student.

(i) If, due notice having been given, a student fails to attend a meeting of the Appeals Committee or subcommittee scheduled to consider that student's appeal, the Appeals Committee or subcommittee, at its discretion, may defer consideration of the appeal or may proceed to determine the appeal.

(j) A student who has been excluded in accordance with these resolutions and has lodged a timely appeal against that exclusion may re-enrol pending determination of that appeal if it has not been determined by the commencement of classes in the next appropriate semester.

Special Arrangements and Special Consideration

The University's assessment practices are designed to ensure that conditions are as consistent as possible and that individual students are not disadvantaged.

Special Arrangements

The Special Arrangements for Examination and Assessment policy is designed to support and assist students who are experiencing difficulty in meeting their assessment requirements due to competing essential community commitments. Special Arrangements may be made available to any student enrolled within a Faculty of Science unit of study, who is unable to meet assessment requirements or attend examinations, because of one or more of the following situations:

- Essential religious commitments or essential beliefs;
- Compulsory legal absence (e.g. jury duty, court summons, etc);
- Sporting or cultural commitments, including political and union commitments, where the student is representing the University, state or nation;
- Australian Defence Force Commitments (including Army Reserve).

Special Arrangements may only be considered in the above circumstances if the commitment falls on the same day as an assessment task or examination. Special Arrangements will not be made if the commitment falls before or after the assessment task or examination. *The Application for Special Arrangements must be submitted no later than seven (7) days prior to the due date of the assessment or examination for which alternative arrangements are being sought.* Students may elect to include details on preparation time required for the essential commitment (for example, travel time, training camps etc) but the Faculty of Science is under no obligation to make additional arrangements for preparation time. This information should be noted on the Application Form, and supporting documentation detailing the tasks and time required to prepare must be submitted (in addition to the documents listed above).

In cases of an extended absence, the relevant School should discuss the option of withdrawal without failure with students. An 'Extended Absence' is defined, for the purposes of Special Arrangements, as being a period of more than two weeks.

To apply for Special Arrangements the student must:

- Obtain and complete a Special Arrangements Application pack from the Faculty of Science Information Office or from the Faculty website.
- *For arrangements due to religious or ceremonial commitments* the student must have a religious authority complete the Statement of Essential Religious or Ceremonial Commitment (SERCC).
- *For arrangements due to Compulsory legal absence, Sporting or cultural commitments or Australian Defence Force Commitments* the student must attach the appropriate documentation (Jury Summons, Notification of Selection for Sporting Event or Brigade Statement etc).
- Original paperwork should be lodged at the Student Information Office of the Faculty of Science, with *one copy for each piece of assessment* for which consideration is being sought. All copies of the application will be stamped by Faculty staff on receipt. The student is required to distribute stamped copies of the application to the School administrative office as directed by Faculty staff.
- Students will be notified of the academic judgement concerning their application for Special Consideration by the Faculty of Science, via an e-mail to their University e-mail account.

Special Consideration

Generally, serious illness or misadventure will be taken into account when considering a student's academic performance in a course or Units of Study. There is, however, a clear distinction between long-standing illness or difficulties which prevent students from attending classes or completing required work or which seriously interfere with their capacity to study for long periods, and short-term serious illness or misadventure that may prevent a well-prepared student from sitting for an examination or completing a particular assignment. *Applications must be received within seven (7) days from the end of the period for which consideration is sought (iefrom the assignment due date or date of examination).*

To apply for Special Consideration a student must:

- Obtain and complete a Special Consideration Application pack from the Student Information Office of the Faculty of Science or from the Faculty website.
- *For consideration due to serious illness* the student must have a registered medical practitioner or counsellor complete the Professional Practitioners Certificate.
- *For consideration due to misadventure* the student must attach the appropriate documentation (police reports, counselling service statements etc).
- Original paperwork should be lodged at the Student Information Office of the Faculty of Science, with *one copy for each piece of assessment* for which consideration is being sought. All copies of the application will be stamped by Faculty staff on receipt. The student is required to distribute stamped copies of the application to the School administrative office as directed by Faculty staff.
- Students will be notified of the academic judgement concerning their application for Special Consideration by the Faculty of Science, via an e-mail to their University e-mail account.

Code of Conduct for Students

1. Principles

This Code of Conduct has been formulated to provide a clear statement of the University's expectations of students in respect of academic matters and personal behaviour.

Study at the University presents opportunities for interacting with other members of the University community. The University recognises and values the diversity of student experiences and expectations, and is committed to treating students, both academically and personally, in a fair and transparent manner. All students, in return, are required to comply with the requirements set down in this Code of Conduct.

The University reaffirms its commitment to:

- high academic standards, intellectual rigour and a high quality education;
- intellectual freedom and social responsibility;
- recognition of the importance of ideas and the pursuit of critical and open enquiry;
- tolerance, honesty and respect as the hallmarks of relationships throughout the University community; and
- high standards of ethical behaviour.

All students are required to be aware of and act consistently with these values.

2. **Coverage**

This Code of Conduct applies to all students of the University of Sydney, in respect of all actions and activities (including inaction or inactivity) relating to or impacting on the University or its students and employees. It must be read in conjunction with the statutes, rules, and resolutions of the University.

3. Definitions

In this Code of Conduct:

Student means all students of the University of Sydney, including but not limited to fee paying students, HECS-Help students, FEE-Help students, audit students, Centre for Continuing Education Students, Centre for English Teaching students, exchange students, Study Abroad students, Summer School students and Winter School students.

Employee means all staff of the University of Sydney, including full-time, part-time and casual staff.

4. Personal Conduct

All students must:

- treat all employees, honorary appointees, consultants, contractors, volunteers, any other members of the public, and other students with respect, dignity, impartiality, courtesy and sensitivity;
- maintain a cooperative and collaborative approach to inter-personal relationships;
- act honestly and ethically in their dealings with University employees, honorary appointees, consultants, contractors, volunteers, any other members of the public and other students;
- respect the privacy of University employees, honorary appointees, consultants, contractors, volunteers, any other members of the public and other students;
- ensure that they do not act in a manner that unnecessarily or unreasonably impedes the ability of University employees, honorary appointees, consultants, contractors, volunteers, any other members of the public and other students to carry out their study, research or work at the University, including in the University of Sydney Library, lecture theatres and laboratories;
- ensure that they do not act in a manner that unnecessarily or unreasonably impedes the ability of University employees, honorary appointees, consultants, contractors, volunteers, any other members of the public and other students to acess or use the resources of the University, including in the University Library resources, lecture theatres and laboratories; and
- ensure that they do not become involved in or encourage discrimination against or harassment or bullying of University employees, honorary appointees, consultants, contractors, volunteers, any other members of the public or other students.

5. Academic Conduct

All students must:

- ensure that their enrolment and progress in their award course is lawful and consistent with the statutes, rule and resolutions

of the University of Sydney. Students must not enrol in additional units of study outside the degree resolutions even if the student information system allows it when enrolling on-line. It is a student's responsibility to maintain current information in the student information system, and observe key dates and deadlines;
- read all official correspondence from the University, including email;
- act ethically and honestly in the preparation, conduct, submission and publication of academic work, and during all forms of assessment, including formal examinations and informal tests;
- avoid any activity or behaviour that would unfairly advantage or disadvantage another student academically;
- conform to the University's requirements for working with humans, animals and biohazards;
- behave professionally, ethically and respectfully in all dealings with the University's learning partners during extramural placements and practicums; and
- use the University's resources, including information and communication technology resources, in a lawful and ethical manner and for University purposes only, unless express permission has been granted for non-University or private usage.

6. Authority

This Code of Conduct was approved by the Academic Board pursuant to the University of Sydney (Academic Governance) Rule 2003 on 2 February 2005.

For further details on the Code of Conduct for Students, students should consult the Academic Board Policies website:
http ://www.usyd. edu. au/ab/policies/

Student Plagiarism: Coursework Policy and Procedures

Part A - Purpose

1. Academic Honesty and Prohibition on Plagiarism

(1) The role of the University of Sydney is to create, preserve, transmit and apply knowledge through teaching, research, creative works and other forms of scholarship. The University is committed to academic excellence and high standards of ethical behaviour as the cornerstones of scholastic achievement and quality assurance. The University requires all students to act honestly, ethically and with integrity in their dealings with the University, its employees, members of the public and other students.

(2) The University of Sydney is opposed to and will not tolerate Plagiarism. It is the responsibility of all students to:
(a) ensure that they do not commit or collude with another person to commit Plagiarism;
(b) report possible instances of Plagiarism; and
(c) comply with this Policy and Procedure.

(3) The University will treat all identified cases of student Plagiarism seriously, in accordance with this Policy and Procedure, and with Chapter 8 of the University of Sydney By-Law 1999 (as amended) which deals with Student Discipline.

Part B - Preliminary

2. Commencement and Coverage

This Policy and Procedure commences on 4 April 2005. It replaces all previous policies and procedures relating to Plagiarism by students enrolled in course work degrees, to the extent that any such previous policies and procedures are inconsistent with this Policy and Procedure. The University's Code of Conduct for Responsible Research Practice and Guidelines for dealing with Allegations of Research Misconduct are accessible on the University's website at: www.usyd. edu. au/policy.

3. Authority

The Policy and Procedures were approved by the Vice-Chancellor on 15 February 2005.

4. Definitions

In this Policy and Procedure:

Acknowledgement of the Source means identifying at least:
(1) the author or person who owns the Work; and
(2) the place from which the Work or part of the Work was sourced.

Dishonest Plagiarism has the meaning given to it by Part B Clause 7.

Examiner means the person responsible for assessing the Work.

Legitimate Cooperation means any constructive educational and intellectual practice that aims to facilitate optimal learning outcomes through interaction between students, including:
(1) researching, writing and/or presenting joint Work;
(2) discussion of general themes and concepts;
(3) interpretation of assessment criteria;
(4) informal study/discussion groups; and
(5) strengthening and development of academic writing skills through peer assistance. Negligent Plagiarism has the meaning given to it by Part B Clause 6.

Nominated Academic means the relevant Heads of School and/or Associate Deans responsible for handling Plagiarism, as nominated by the Dean of the Faculty in accordance with the University's Delegations of Authority. Plagiarism has the meaning given to it by Part B Clause 5.

Work means ideas, findings or written and/or published material.

Written Warning means a warning issued under Part D Clauses ll(2)(b)orl2(4)(b).

5. Plagiarism

(1) Plagiarism for the purpose of this Policy and Procedure (which applies to students enrolled in course work degrees) means presenting another person's Work as one's own Work by presenting, copying or reproducing it without Acknowledgement of the Source.

(2) Plagiarism includes presenting Work for assessment, publication, or otherwise, that includes:
(a) sentences, paragraphs or longer extracts from published or unpublished Work (including from the Internet) without Acknowledgement of the Source; or
(b) the Work of another person, without Acknowledgement of the Source and presented in a way that exceeds the boundaries of Legitimate Cooperation.

(3) Plagiarism can be negligent (Negligent Plagiarism) or dishonest (Dishonest Plagiarism).

6. Negligent Plagiarism

(1) Negligent Plagiarism means innocently, recklessly or carelessly presenting another person's Work as one's own Work without Acknowledgement of the Source.

(2) Negligent Plagiarism often arises from a student's fear of paraphrasing or writing in their own words, and/or ignorance of this Policy and Procedure. It arises from:
(a) failure to follow appropriate referencing practices;
(b) failure to determine or verify and acknowledge the source of the Work.

7. Dishonest Plagiarism

(1) Dishonest Plagiarism means knowingly presenting another person's Work as one's own Work without Acknowledgement of the Source.

(2) **Alleged Plagiarism** will be deemed to be alleged Dishonest Plagiarism where:
(a) substantial proportions of a student's Work have been copied from the Work of another person, in a manner that clearly exceeds the boundaries of Legitimate Cooperation;
(b) a student's Work contains a substantial body of copied material (including from the Internet) without Acknowledgement of the Source, and in a manner that cannot be explained as Negligent Plagiarism;
(c) there is evidence that the student engaged another person to produce or conduct research for the Work, either partly or wholly, for payment or other consideration; or
(d) the student has previously received a Written Warning.
Part C - Preventing Plagiarism.

Part C - Preventing Plagiarism

8. Compliance Statements

All students are required to submit a signed statement of compliance with all Work submitted to the University for assessment, presentation or publication. A statement of compliance must be in the form of:

(1) a University assignment cover sheet;
(2) a University electronic form; or
(3) a University written statement; certifying that no part of the Work constitutes a breach of this Policy.

Part D - Procedure for dealing with Plagiarism

9. Procedural fairness
The University is committed to dealing with student Plagiarism in accordance with the principles of procedural fairness, including the right of a student to:
(1) be informed of the allegations against them in sufficient detail to enable them to understand the precise nature of the allegations and to properly consider and respond;
(2) have a reasonable period of time within which to respond to the allegations against them;
(3) have the matter resolved in a timely manner;
(4) be informed of their rights under this Policy and Procedure and under Chapter 8 of the University of Sydney By-Law 1999 (as amended);
(5) invite a support person or student representative to any meeting regarding alleged Plagiarism;
(6) impartiality in any investigation process; and
(7) an absence of bias in any decision-maker.

10. Identification and Assessment of Alleged Plagiarism
(1) Where an Examiner detects or is made aware of alleged Plagiarism by a student, the Examiner must report the alleged Plagiarism to a Nominated Academic.
(2) Where:
(a) an Examiner reports alleged Plagiarism to a Nominated Academic; or
(b) a Nominated Academic otherwise becomes aware of alleged Plagiarism;
the Nominated Academic must, in consultation with the Examiner, make a preliminary assessment of whether the alleged Plagiarism would, if proven, constitute Negligent Plagiarism or Dishonest Plagiarism.
(3) The Nominated Academic and the Examiner will make a preliminary assessment of whether the alleged Plagiarism would, if proven, constitute Negligent Plagiarism or Dishonest Plagiarism on a case by case basis, taking into account factors such as:
(a) the extent of the alleged Plagiarism measured against the student's original contribution to the Work;
(b) the percentage value of the Work in the unit of study or course;
(c) the student's overall academic performance in the unit of study or course; and
(d) the circumstances in which the Plagiarism is alleged to have occurred.

11. Negligent Plagiarism
(1) Cases of alleged Negligent Plagiarism will be handled by the Nominated Academic in accordance with this clause and with Part D Clause 9 (Procedural Fairness) above.
(2) Where, following discussion with the student, a Nominated Academic forms the view that the Student is guilty of Negligent Plagiarism, the Nominated Academic will:
(a) counsel the student by explaining referencing guidelines, providing a copy of this Policy and Procedure, and referring the student to services for assistance; and
(b) issue a Written Warning about the consequences of any subsequent breaches of this Policy.
(3) A copy of a Written Warning issued under Clause 1 l(2)(b) above must be:
(a) signed and dated by the Nominated Academic and the student;
(b) retained by the student; and
(c) placed on a central file maintained by the Registrar.
(4) Where, following discussion with the student, the Nominated Academic forms the view that the student is guilty of Negligent Plagiarism, the Nominated Academic may also take other appropriate action, including:
(a) requiring the student to resubmit the Work for assessment;
(b) requiring the student to undertake another form of assessment;
(c) requiring the student to undertake other remedial action; or
(d) applying a fail grade to the Work or part thereof.

12. Dishonest Plagiarism
(1) Cases of alleged Dishonest Plagiarism will be handled in accordance with this clause and with Part D Clause 9 (Procedural Fairness) above.
(2) The Nominated Academic will make a preliminary assessment of whether the alleged Dishonest Plagiarism is serious enough, if proven, to constitute potential student misconduct under Chapter 8 of the University of Sydney By-Law 1999 (as amended).
(3) In making his or her assessment under Part D Clause 12(2) above, the Nominated Academic will take into account:
(a) whether the student has previously received a Written Warning;
(b) the extent of the alleged Dishonest Plagiarism measured against the student's original contribution to the Work;
(c) the percentage value of the Work in the unit of study or course;
(d) the capacity of the alleged Dishonest Plagiarism to adversely affect the student's peers and/or teachers; and
(e) the capacity of the alleged Dishonest Plagiarism to impact adversely on the actual or perceived academic standards of the University.
(4) Where the Nominated Academic assesses that the alleged Dishonest Plagiarism is not serious enough, if proven, to constitute potential student misconduct under Chapter 8 of the University of Sydney By-Law 1999 (as amended), the Nominated Academic will, following discussion with the student:
(a) counsel the student by explaining referencing guidelines, providing a copy of this Policy and Procedure, and referring the student to services for assistance; and
(b) issue a Written Warning about the consequences of any subsequent breaches of this Policy.
(5) A copy of a Written Warning issued under Part D Clause 12(4)(b) above must be:
(a) signed and dated by the Nominated Academic and the student;
(b) retained by the student; and
(c) placed on a central file maintained by the Registrar.
(6) Where the Nominated Academic assesses that the alleged Dishonest Plagiarism is not serious enough, if proven, to constitute potential student misconduct under Chapter 8 of the University of Sydney By-Law 1999 (as amended), the Nominated Academic may also, following discussion with the student, take other appropriate action, including:
(a) requiring the student to resubmit the Work for assessment;
(b) requiring the student to undertake another form of assessment;
(c) requiring the student to undertake other remedial action;
(d) applying a fail grade to the Work or part thereof; or
(e) applying a fail grade to the unit of study.
(7) Where the Nominated Academic assesses that the alleged Dishonest Plagiarism is serious enough, if proven, to constitute potential student misconduct under Chapter 8 of the University of Sydney By-Law 1999 (as amended), the Nominated Academic will refer the alleged Dishonest Plagiarism to the Registrar.
(8) The Nominated Academic will refer the alleged Dishonest Plagiarism to the Registrar in all cases of alleged Dishonest Plagiarism where the student has previously received a Written Warning.

13. Appeals
An appeal by a student against a decision made under Part D Clauses 1 l(4)(a)-(d) and 12(6)(a)-(e) of this Procedure will be handled by the University in accordance with the Resolutions of Senate and the Academic Board on Student Appeals against Academic Decisions.

Faculty life and representation

Student membership of the Faculty

The Constitution of the Faculty of Science provides that, in addition to the ex officio and academic staff members of the Faculty, there shall be the following categories of membership:

1. not more than three persons distinguished in the field of Science and its teaching, appointed by the Faculty on the nomination of the Dean;
2. not more than six students, undergraduate or postgraduate, enrolled as candidates for a degree or diploma in the Faculty of Science elected in the manner prescribed by resolution of the Senate; and
3. not more than five persons, who have teaching, research or offer appropriate associations with the work of the Faculty, appointed by the Faculty on the nomination of the Dean.

Two of the six students are elected annually by the undergraduate students in the faculty, two are elected by the postgraduate students and one each is nominated by each of the Sydney University Science Society and the Sydney University Postgraduate Representative Association.

The Senate resolutions for the student membership of the Faculty of Science are set out in full in *The University of Sydney Calendar*.

Students may request permission to attend Faculty meetings as observers. Details are available from the Faculty office.

Sydney University Science Society (SCISOC)

As a student in the Faculty of Science you are a member of the Sydney University Science Society (SCISOC), the Faculty society. Part of the fee you pay to the SRC is allocated to your Faculty society; SCISOC uses this money to promote activities of both an educational and a social nature.

The Society holds a number of activities throughout the year, including barbecues every two weeks and the Annual Science 'Bucky' Ball. The Society appoints sports directors who help organise interfaculty sport.

The society runs a stall during orientation week, where T-shirts are sold and you can find out more about what the SCISOC does. The Aqua Regia (official publication of SCISOC) which heralds information concerning the activities of SCISOC and Science departmental societies, is produced weekly and can be found on official departmental noticeboards. The postal address is Faculty of Science, Carslaw Building, F07, University of Sydney, 2006.

The affairs of the society are governed by a council consisting of office bearers, delegate members from member societies, student members of Faculty and nine members elected at the annual general meeting, at least three of whom are first year students. You are encouraged to attend the AGM (held in Semester 1) and to take an active part in the society and on council. Council meets regularly during term and all members are invited to attend the meetings. These are advertised in the Daily Bull. Your attendance will ensure that SCISOC effectively meets the needs of science students on campus. Visit the Web site (http://www.sci.soc.usyd.edu.au).

Member societies

A number of the departments within the Faculty of Science have departmental societies, for example the Alchemist's Society, Biochemical Society, Biological Society, School of Geosciences Society (includes Geography, Geology, Environmental Science and Marine Science), Mathematical Society, Medical Science Society, Microbiology Society, Physics Society, and Psychological Society. These societies organise talks, films, field trips and other activities relating to their particular discipline, as well as parties, wine and cheese evenings and other social activities. Most departmental societies have a stall during the orientation period.

Employment for graduates in Science

The field of employment for science graduates is extraordinarily wide, ranging from the dedicated research scientist in a university or research laboratory to the managing director of a large corporation, the school teacher, the technical representative, the laboratory bench worker, the production superintendent, the consultant geologist, the bird banding biologist, the actuary, the computer sales representative, the beachcomber ... the list is endless and will depend on a students subject choices and interests. Many science graduates choose to undertake further study to prepare for employment. There is a wide range of graduate diplomas and coursework masters degrees available. Some of these are: molecular biotechnology, bioinformatics, nutrition and dietetics, information technology, environmental science, marine ecology and psychology.

Some science graduates complete a Bachelor of Engineering degree after an additional two years' study. This qualifies them as professional engineers, with a wide range of additional job opportunities in chemical, civil, electrical, mechanical and mining engineering. If you wish to consider this option, it is important to make sure that you choose the appropriate prerequisite subjects in your science degree.

It is prudent to plan your course with a career in mind, or a couple of careers if possible. For example, even though you might be sure you want to teach mathematics, you might include some computer science in your course so that if you did not like teaching you would have another choice of career. Alternatively, you might have your heart set on being a biologist, but as an insurance policy in case you could not get a job as a biologist, you might consider also majoring in biochemistry, microbiology or chemistry to widen the scope. This is not to say you should give up too easily if you want to be a biologist. In areas where jobs are not too plentiful you have to start right at the beginning of your course to prepare to secure that job on graduation. Some suggestions are to learn scuba-diving, join the bush-walking or speleological clubs, work in the vacation for one of the national parks-for nothing if necessary-and make as many personal contacts as you can. Such evidence of keenness and initiative impresses an employer. As you will have understood, it is not only your academic ability an employer looks at but also your personality, evidence of a sense of responsibility and activities beyond the set curriculum.

Similarly, if you want a job related to chemistry, physics, geology, computer science, biochemistry, etc, do your best to obtain a vacation job that will enable you to claim relevant experience when applying for your first job. These vacation jobs are hard to get, admittedly, but the extra legwork and initiative involved in finding one will pay off in the long run. Some undergraduate degrees, such as the BSc (Molecular Biotechnology) feature industry or industry-related experience as part of the requirements for the degree. Such placements occur during semester teaching periods. Other departments can organise industry placements for their students, which do not count to the degree but provide valuable experience for a new graduate.

3. Undergraduate tables and units of study

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

Table I: Bachelor of Science

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
Agricultural Chemistry				
For a major in Agricultural Chemistry, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.				
Intermediate units of study				
AGCH 2003	Rural Environmental Chemistry (Intro)	6	P 12 credit points of Junior Chemistry. N AGCH2001, AGCH2002, CHEM2404	Semester 1
Senior units of study				
AGCH 3024	Chemistry and Biochemistry of Foods	6	P 12 credit points of Intermediate units from Molecular Biology and Genetics, Biochemistry or Chemistry **N** AGCH (3016 or 3017 or 3025) NB: Department permission required for enrolment.	Semester 1
AGCH 3025	Chemistry and Biochemistry of Foods A	6	P 6 credit points of Intermediate units in Agricultural Chemistry, Chemistry or Biochemistry N May not be counted with AGCH (3017, 3024).	Semester 1
AGCH 3026	Chemistry and Biochemistry of Foods B	6	P 6 credit points of Intermediate Chemistry, Biochemistry or Agricultural Chemistry C AGCH 3025 N AGCH3003, AGCH3005	Semester 1
AGCH 3030	Rural Environmental Chemistry A	6	P 6 credit points of either Intermediate Agricultural Chemistry, Chemistry, Biochemistry, Plant Science or Environmental Science N AGCH3020, AGCH3021, AGCH3022.	Semester 1
AGCH 3031	Rural Environmental Chemistry B	6	P 6 credit points of either Intermediate Agricultural Chemistry, Chemistry, Biochemistry, Plant Science or Environmental Science N AGCH3020, AGCH3021, AGCH3022	Semester 2
Anatomy and Histology				
For a major in Anatomy and Histology, the minimum requirement is 24 credit points from any ANAT, HSTO, EMHU, or NEUR Senior units of study. See listing for Physiology major in this Table for Senior NEUR units.				
Intermediate units of study				
The completion of 6 credit points of MBLG units of study is highly recommended.				
ANAT 2008	Principles of Histology	6	A General concepts in human biology P 12 credit points of Junior Biology or Junior Psychology N ANAT2001	Semester 1
ANAT 2009	Comparative Primate Anatomy	6	A Knowledge of basic vertebrate biology P 12 credit points of Junior Biology or Junior Psychology or Junior Archaeology. NANAT2002	Semester 2
ANAT 2010	Concepts of Neuroanatomy	6	A Background in basic mammalian biology. P BIOL (1001 or 1901) and one of: BIOL (1002 or 1902 or 1003 or 1903) or PSYC (1001 and 1002). N ANAT2003	Semester 2
Senior ANAT units of study				
ANAT 3006	Forensic Osteology	6	A An understanding of basic human musculoskeletal anatomy. P Credit in ANAT2009 or Credit in ANAT2002 (for students who completed Intermediate study before 2005) NB: The completion of 6 credit points of MBLG is highly recommended.	Semester 1
ANAT 3007	Visceral Anatomy	6	A General knowledge of biology. PANAT2009 or ANAT2010 or BMED2803 or BMED2804 or BMED2805 or BMED2806	Semester 1
HSTO 3001	Microscopy & Histochemistry Theory	6	A Basic understanding of biology. PANAT2008; BMED 2803 or 2804 or 2805 or 2806 C HSTO3002	Semester 1
HSTO 3002	Microscopy & Histochemistry Practical	6	A Basic understanding of biology. PANAT2008 CHSTO3001	Semester 1
ANAT 3004	Cranial and Cervical Anatomy	6	A General knowledge of biology. P ANAT2002 or ANAT2009 or BMED2803 or BMED2804 or BMED2805 or BMED2806 N ANAT3005 NB: The completion of 6 credit points of MBLG is highly recommended.	Semester 2
ANAT 3008	Musculoskeletal Anatomy	6	A Some knowledge of basic mammalian biology PANAT2009 or ANAT2002 (for students who completed Intermediate study before 2005) or BMED2803 or BMED2804 or BMED2805 or BMED2806 N ANAT3005.	Semester 2
EMHU 3001	Electron Microscopy and Imaging/Theory	6	A General concepts in Biology, and in Biochemistry or inChemistry. P At least 12 cp of Intermediate Science units from any of the following: Anatomy & Histology, Biochemistry, Biology, Chemistry, Mathematics, Microbiology, Molecular Biology & Genetics, Pharmacology, Physics, Physiology or Statistics.For BMedSc students: either 36 cp of Intermediate units including BMed (2501,2503 & 2505) or 42 cp of BMed Intermediate units including (2801, 2802, 2803 & 2806)	Semester 2

Unit of Study		CP	A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition	Session
EMHU **3002**	Electron Microscopy and Imaging/Prac	6	A General concepts in Biology, Histology and inBiochemistry or in Chemistry. P 12 cp as follows: 6 cp from ANAT2008 OR 4 cp from ANAT2001 plus at least 6 cp OR 8 cp respectively of Intermediate Science units of study.For BMedSci: Either 36 credit points of intermediate units including BMed (2501, 2503 & 2505) or 42 credit points of BMed Intermediate units including BMed (2801, 2802, 2803 & 2806) CEMHU3001	Semester 2
HSTO 3003	Cells and Development: Theory	6	A (i) An understanding of the basic structure of vertebrates;(ii) An understanding of elementary biochemistry and genetics. P For BSc students: ANAT 2008 or ANAT2001 and any one of the following intermediate MBLG units (2771, 2871, 2001, 2101, 2901).For BMedSc students: 42 credit points of Intermediate BMED units, including: BMED2801, 2802, 2805. N ANAT3002	Semester 2
HSTO 3004	Cells and Development: Practical (Adv)	6	P Note: This advanced unit of study is only available to select students who have achieved a mark of 65 or above in the following prerequisite units of study.For BSc students: ANAT 2008 or ANAT2001 and any one of the following intermediate MBLG units (2771,2871,2001,2101,2901).For BMedSc students:42 credit points of Intermediate BMED units, including: BMED2801, 2802, 2805. C HSTO3003 N ANAT3002	Semester 2

Biochemistry

For a major in Biochemistry, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.

Intermediate units of study

The completion of 6 credit points of MBLG units of study is highly recommended.

BCHM 2071	Protein Biochemistry	6	A CHEM (1101 and 1102) P 12 credit points of Junior Chemistry plus MBLG 1001 C Recommended concurrent units of study: intermediate MBLG for progression to Senior Biochemistry, and/or Intermediate Chemistry. N BCHM2011 or BCHM2971	Semester 1
BCHM **2971**	Protein Biochemistry (Advanced)	6	**P** 12 credit points of Junior Chemistry and Distinction in MBLG 1001 N BCHM2011, BCHM2071.	Semester 1
BCHM **2072**	Human Biochemistry	6	**P** Either MBLG 1001 and 12 credit points of Junior Chemistry or either MBLG2071 or MBLG2971 N BCHM2972, BCHM2002, BCHM2102, BCHM2902, BCHM2112	Semester 2
BCHM **2972**	Human Biochemistry (Advanced)	6	P Distinction in one of (BCHM (2071 or 2971) or MBLG(2071 or 2971)) or (Distinction in MBLG 1001 and Distinction in 12 credit points of Junior Chemistry). N BCHM2072, BCHM2002, BCHM2102, BCHM2902,BCHM2112	Semester 2

Senior units of study

BCHM **3071**	Molecular Biology & Biochemistry-Genes	6	P (MBLGlOOl and 12 CP of Intermediate BCHM) or (MBLG2771/2871 and (6CP of Intermediate BCHM units or MBLG 2072/2972)) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804) N BCHM3971, BCHM3001, BCHM3901 NB: From 2007 the prerequisites will be MBLGlOOl and 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804	Semester 1
BCHM 3971	Molecular Biology & Biochem- Genes (Adv)	6	P (MBLGlOOl and Distinction in 12 CP of Intermediate BCHM) or (Distinction in MBLG2771/2871 and Distinction in 6CP of Intermediate BCHM units or MBLG 2072/2972) or (42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804) N BCHM3071, BCHM3001, BCHM3901 NB: From 2007 the prerequisites will be MBLGlOOl and Distinction in 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804	Semester 1
BCHM **3081**	Mol Biology & Biochemistry- Proteins	6	P (MBLGlOOl and 12 CP of Intermediate BCHM) or (MBLG2771/2871 and (6CP of Intermediate BCHM units or MBLG 2072/2972)) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804) N BCHM3981, BCHM3001, BCHM3901. NB: From 2007 the prerequisites will be MBLGlOOl and 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804	Semester 1
BCHM 3981	Mol Biology & Biochemistry- Proteins Adv	6	P (MBLGlOOl and Distinction in 12 CP of Intermediate BCHM) or (Distinction in MBLG2771/2871 and Distinction in 6CP of Intermediate BCHM units or MBLG 2072/2972) or (42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804) N BCHM3081, BCHM3001, BCHM3901 NB: From 2007 the prerequisites will be MBLGlOOl and Distinction in 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804	Semester 1
BCHM **3072**	Human Molecular Cell Biology	6	P (MBLGlOOl and 12 CP of Intermediate BCHM) or (MBLG2771/2871 and 6CP of Intermediate BCHM units or MBLG 2072/2972) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804) N BCHM3972, BCHM3002, BCHM3902, BCHM3004, BCHM3904 NB: From 2007 the prerequisites will be MBLGlOOl and 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804	Semester 2
BCHM **3972**	Human Molecular Cell Biology (Advanced)	6	P (MBLGlOOl and Distinction in 12 CP of Intermediate BCHM) or (Distinction in MBLG2771/2871 and Distinction in 6CP of Intermediate BCHM units or MBLG 2072/2972) or (42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804) N BCHM3072, BCHM3002, BCHM3004, BCHM3902, BCHM3904. NB: From 2007 the prerequisites will be MBLGlOOl and Distinction in 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804	Semester 2
BCHM **3082**	Medical and Metabolic Biochemistry	6	P (MBLGlOOl and 12 CP of Intermediate BCHM) or (MBLG2771/2871 and (6CP of Intermediate BCHM units or MBLG 2072/2972)) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804) N BCHM3982, BCHM3002, BCHM3004, BCHM3902, BCHM3904. NB: From 2007 the prerequisites will be MBLGlOOl and 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804	Semester 2
BCHM 3982	Medical and Metabolic Biochemistry (Adv)	6	P (MBLGlOOl and Distinction in 12 CP of Intermediate BCHM) or (Distinction in MBLG2771/2871 and Distinction in 6CP of Intermediate BCHM units or MBLG 2072/2972) or (42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804) N BCHM3082, BCHM3002, BCHM3004, BCHM3902, BCHM3904. NB: From 2007 the prerequisites will be MBLGlOOl and Distinction in 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804	Semester 2

Unit of Study		CP	A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition	Session
BCHM **3092**	Proteomics and Functional Genomics	6	P (MBLG1001 and 12 CP of Intermediate BCHM) or (MBLG2771/2871 and (6CP of Intermediate BCHM units or MBLG 2072/2972)) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804) N BCHM3992, BCHM3098 NB: From 2007 the prerequisites will be :MBLG1001 and 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804	Semester 2
BCHM **3992**	Proteomics and Functional Genomics (Adv)	6	P (MBLG1001 and Distinction in 12 CP of Intermediate BCHM) or (Distinction in MBLG2771/2871 and Distinction in 6CP of Intermediate BCHM units or MBLG 2072/2972) or (42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804) N BCHM3092, BCHM3098 NB: From 2007 the prerequisites will be :MBLG1001 and Distinction in 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804	Semester 2

Biology

For a major in Biology, the minimum requirement is 24 credit points from Senior BIOL units of study listed in this subject area. Senior PLNT units and BIOL 3009/3909, 3017/3917 may be counted towards a major in Biology or Plant Science, not both.

Junior units of study

BIOL 1001	Concepts in Biology	6	A No previous knowledge required. Students are encouraged to take the Biology Bridging Course. Students who have completed HSC Biology are advised to enrol in BIOL1101 Ecosystems to Genes rather than BIOL 1001. N BIOL (1101 or 1901) NB: It is recommended that BIOL (1001 or 1101 or 1901) be taken before all Semester 2 Junior units of study in Biology.	Semester 1, Summer
BIOL 1101	Biology - Ecosystems to Genes	6	P HSC 2-unit Biology or equivalent. N BIOL (1001 or 1901) NB: It is recommended that BIOL (1001 or 1101 or 1901) be taken before all Semester 2 Junior units of study in Biology.	Semester 1
BIOL 1901	Biology - Ecosystems to Genes (Advanced)	6	P UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. N BIOL (1001 or 1101) NB: It is recommended that BIOL (1001 or 1101 or 1901) be taken before all Semester 2 Junior units of study in Biology.Department permission required for enrolment.	Semester 1
BIOL 1002	Living Systems	6	A HSC 2-unit Biology. Students who have not undertaken an HSC biology course are strongly advised to complete Biology Bridging Course before lectures commence. N BIOL 1902	Semester 2
BIOL 1902	Living Systems (Advanced)	6	**P** UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. N BIOL (1002 or 1904 or 1905) NB: Department permission required for enrolment.	Semester 2
BIOL 1003	Human Biology	6	A HSC 2-unit Biology N BIOL 1903 or EDUH1016	Semester 2, Summer
BIOL 1903	Human Biology (Advanced)	6	**P** UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. N BIOL (1003 or 1904 or 1905) or EDUH1016 NB: Department permission required for enrolment.	Semester 2

Intermediate units of study

The completion of 6 credit points of MBLG units of study is highly recommended.

BIOL 2011	Invertebrate Zoology	6	A The content of BIOL (1002 or 1902) is assumed knowledge and students entering from BIOL (1003 or 1903) will need to do some preparatory reading. P BIOL (1001 or 1101 or 1901) and (either BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016 (for BEd (Secondary) (Human Movement and Health Education))) and 12 credit points of Junior Chemistry. For students in BSc (Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. N BIOL (2001 or 2101 or 2901 or 2911) NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 1
BIOL 2911	Invertebrate Zoology (Advanced)	6	P Distinction average in BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016. 12 credit points of Junior Chemistry (or for BSc (Marine Science) students 6 credit points of Junior Chemistry and 6 credit points of Junior Physics). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N BIOL (2001 or 2101 or 2011 or 2901). NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 1
BIOL 2016	Cell Biology	6	P 12 credit points of Junior Biology or EDUH1016 and 12 credit points of Junior Chemistry. For students in the BSc (Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. N BIOL (2006 or 2106 or 2906 or 2916) NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 1
BIOL 2916	Cell Biology (Advanced)	6	P Distinction average in BIOL (1001 or 1101 or 1901) and one of BIOL (1002 or 1902 or 1003 or 1903 or 1904 or 1905) and 12 cp of Junior Chemistry. N BIOL (2006 or 2106 or 2906 or 2016). NB: The completion of 6 credit points of MBLG units of study is highly recommended. This is a core intermediate unit in the BSc (Molecular Biology and Genetics) award course.	Semester 1
PLNT 2001	Plant Biochemistry and Molecular Biology	6	P 12 credit points of Junior Chemistry and 12 credit points of Junior Biology (or with the Dean's permission BIOL 1201 and BIOL 1202) N PLNT2901, AGCH2001.	Semester 1
PLNT 2901	Plant Biochem & Molecular Biology (Adv)	6	PA Distinction average in 12 credit points of Junior Chemistry and 12 credit points of Junior Biology (or with the Dean's permission BIOL 1201 and BIOL 1202) N PLNT2001, AGCH2001	Semester 1
PLNT 2002	Aust Flora: Ecology and Conservation	6	P One of BIOL 1001, BIOL 1101, BIOL 1901; One of BIOL 1002, BIOL 1003, BIOL 1902, BIOL 1903, LWSC1002. (With the Dean's permission BIOL 1201 and BIOL 1202 may be substituted for the above.) N PLNT2902, BIOL2004 or BIOL2904.	Semester 1
PLNT 2902	Aust Flora: Ecology & Conservation (Adv)	6	P Distinction average in (one of BIOL 1001, BIOL1101, BIOL 1901) and (one of BIOL 1002, BIOL 1003, BIOL 1902, BIOL 1903, LWSC1002) (or with the Dean's permission BIOL 1201 and BIOL 1202) N PLNT2002, BIOL2004, BIOL2904.	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
BIOL 2012	Vertebrates and their Origins	6	A The content of BIOL (1002 or 1902) is assumed knowledge and students entering from BIOL (1003 or 1903) will need to do some preparatory reading. P BIOL (1001 or 1101 or 1901) and (either BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016 (for BEd (Secondary) (Human Movement and Health Education))) and 12 credit points of Junior Chemistry. For students in BSc (Marine Science) stream: 6 credit points of Junior Chemistry and 6 credit points of Junior Physics. N BIOL (2002 or 2102 or 2912 or 2902) NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 2
BIOL 2912	Vertebrates and their Origins (Advanced)	6	P Distinction average in BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016. 12 credit points of Junior Chemistry (or for BSc (Marine Science) students 6 credit points of Junior Chemistry and 6 credit points of Junior Physics). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N BIOL (2002 or 2902 or 2102 or 2012). NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 2
BIOL 2017	Entomology	6	A BIOL (2001 or 2901 or 2011 or 2911) P 12 credit points of Junior Biology N BIOL2007 NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 2
PLNT 2003	Plant Form and Function	6	A The content of BIOL (1002 or 1902) is assumed knowledge and students entering from BIOL (1003 or 1903) will need to do some preparatory reading. P 12 credit points of Junior Biology (or with the Dean's permission), BIOL 1201 and BIOL 1202 or BIOL 1001 and ENVI1002 N PLNT2903, BIOL2003, BIOL2903,CROP2001.	Semester 2
PLNT 2903	Plant Form and Function (Advanced)	6	A The content of BIOL (1002 or 1902) is assumed knowledge and students entering from BIOL (1003 or 1903) will need to do some preparatory reading. P Distinction average in 12 credit points of Junior Biology or BIOL 1001 and ENVI1002 (or with the Dean's permission, BIOL 1201 and BIOL 1202) N PLNT2003, BIOL2003, BIOL2903, CROP2001	Semester 2

Senior units of study

BIOL 3010	Tropical Wildlife Biology and Management	6	A None, although Vertebrates and their Origins would be useful. P 12 credit points of intermediate level Biology. N BIOL3910 NB: Dates: 19 February - 24th February 2006 Northern Territory followed by tutorials and practicals at the University of Sydney 27 February - 2 March 2006.	S1 Intensive
BIOL 3910	Tropical Wildlife Biol & Management Adv	6	A None, although Vertebrates and their Origins would be useful. P Distinction average in 12 credit points of intermediate level Biology. N BIOL 3010, BIOL3014, BIOL3914 NB: Dates: 19 February - 24th February 2006 Northern Territory followed by tutorials and practicals at the University of Sydney 27 February - 2 March 2006.Department permission required for enrolment.	S1 Intensive
BIOL 3017	Fungal Biology	6	P 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. N BIOL3917 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester la
BIOL 3917	Fungal Biology (Advanced)	6	P Distinction average in 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. N BIOL3 017 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester la
BIOL 3006	Ecological Methods	6	A BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). P 12 credit points of intermediate level Biology; or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. N BIOL (3906 or 3023 or 3923), MARS 3102.	Semester 1
BIOL 3906	Ecological Methods (Advanced)	6	A BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). P Distinction average in 12 credit points of Intermediate Biology; or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. N BIOL (3006 or 3023 or 3923), MARS 3102.	Semester 1
BIOL 3011	Ecophysiology	6	A BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903). P 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. N BIOL3 911 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1
BIOL 3911	Ecophysiology (Advanced)	6	A BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903) P Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. N BIOL3011 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1
BIOL 3012	Animal Physiology	6	**P** 12 credit points of Intermediate Biology including BIOL (2012 or 2002 or 2003 or 2016 or 2006 or 2912 or 2902 or 2903 or 2916 or 2906) or PLNT (2003 or 2903). N BIOL3912 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1
BIOL 3912	Animal Physiology (Advanced)	6	P Distinction average in 12 credit points of Intermediate Biology including BIOL (2012 or 2002 or 2003 or 2006 or 2016 or 2912 or 2902 or 2903 or 2916 or 2906) or PLNT (2003 or 2903). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N BIOL3012. NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1
BIOL 3013	Marine Biology	6	A MARS2006 P 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. N BIOL3913 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1
BIOL 3913	Marine Biology (Advanced)	6	A MARS2006 P Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. N BIOL3013 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1
BIOL 3018	Applications of Recombinant DNA Tech	6	P 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. NBIOL3918	Semester 1
BIOL 3918	Applications of Recombinant DNA Tech Adv	6	P Distinction average inl2 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units.For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED 2502 or BMED 2802. N BIOL3018	Semester 1
BIOL 3027	Bioinformatics and Genomics	6	P 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. N BIOL3927 NB: This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
BIOL 3927	Bioinformatics and Genomics (Advanced)	6	P Distinction average in 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units.For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED 2502 or BMED 2802. N BIOL3027 NB: This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.	Semester 1
BIOL 3008	Marine Field Ecology	6	A Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly advised. P 12 credit points of Intermediate Biology; or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. N BIOL (3908, 3040, 3940, 3024, 3924), MARS 3102 NB: Dates: 5 July 2006 -12 July 2006	S2 Intensive
BIOL 3908	Marine Field Ecology (Advanced)	6	A Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly advised P Distinction average in 12 credit points of Intermediate Biology; or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. N BIOL (3008, 3040, 3940, 3024, 3924), MARS 3102. NB: Dates: 5 July 2006 - 12 July 2006	S2 Intensive
BIOL 3007	Ecology	6	A Although not prerequisites, knowledge obtained from Ecological Methods (BIOL 3006), and Marine Field Ecology (BIOL 3008) and/or Terrestrial Field Ecology (BIOL 3009), or the associated advanced units (BIOL 3906, BIOL 3908 and/or BIOL 3909), is strongly recommended. P 12 credit points of Intermediate Biology; or ENVI 2111 or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. N BIOL (3907, 3024, 3924, 3040, 3940, 3041, 3941, 3042, 3942), MARS 3102.	Semester 2
BIOL 3907	Ecology (Advanced)	6	A Although not prerequisites, knowledge obtained from Ecological Methods (BIOL 3006), and Marine Field Ecology (BIOL 3008) and/or Terrestrial Field Ecology (BIOL 3009), or the associated advanced units (BIOL 3906, BIOL 3908 and/or BIOL 3909), is strongly recommended. Students entering this unit of study should have achieved distinction average. P Distinction average in 12 credit points of Intermediate Biology; or ENVI 2111 or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. N BIOL (3007, 3024, 3924, 3040, 3940, 3041, 3941, 3042, 3942), MARS 3102.	Semester 2
BIOL 3009	Terrestial Field Ecology	6	A Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly recommended. P 12 credit points of intermediate level Biology. N BIOL (3909, 3041, 3941, 3042, 3942, 3024, 3924). NB: Dates: Sunday 16 July to Friday 21 July 2006	S2 Intensive
BIOL 3909	Terrestial Field Ecology (Advanced)	6	A Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly recommended. P Distinction average in 12 credit points of intermediate level Biology. N BIOL (3009, 3041, 3941, 3042, 3942, 3024, 3924). NB: Dates: Sunday 16 July to Friday 21 July 2006	S2 Intensive
BIOL 3025	Evolutionary Genetics & Animal Behaviour	6	P 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. N BIOL3925, BIOL3928	Semester 2
BIOL 3925	Evolutionary Gen. & Animal Behaviour Adv	6	P Distinction average inl2 creditpoints from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units.For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. N BIOL (3025 or 3928).	Semester 2
BIOL 3026	Developmental Genetics	6	P 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. N BIOL3926, BIOL3929	Semester 2
BIOL 3926	Developmental Genetics (Advanced)	6	P Distinction average in 12 creditpoints from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units.For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED 2502 or BMED 2802. N BIOL (3026 or 3929)	Semester 2

Cell Pathology

For a major in Cell Pathology, the minimum requirement is 24 credit points from:

(i) CPAT 3201 and 3202; and

(ii) any two of the listed units of study:

Senior units of study

The completion of 6 credit points of MBLG units of study is highly recommended.

CPAT 3201	Pathogenesis of Human Disease 1	6	**P** At least 6cp intermediate of one of the following: ANAT or BCHM or MBLG or BIOL or HPSC or MICR or PCOL or PHSI, or as the head of department determines.	Semester 2
CPAT 3202	Pathogenesis of Human Disease 2	6	**P** At least 6cp intermediate of one of the following: ANAT or BCHM or MBLG or BIOL or HPSC or MICR or PCOL or PHSI, or as the head of department determines. C CPAT3201	Semester 2

HSTO3001, HSTO3002, HSTO3003, HSTO3004, BCHM3071/3971, BCHM3 072/3 972, BCHM3081/3982, BCHM3082/3982, MICR3011/3911, MICR3012/3912, MICR3 022/3 922.

Information for these Units may be found under the relevant teaching department entries.

Chemistry

For a major in Chemistry, the minimum requirement is 24 credit points from Senior units of study listed in this subject area which must include the associated laboratory units.

Junior units of study

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 chemistry bridging course before lectures commence. N CHEM 1101 or 1901 or 1903 or 1909	Semester 1
CHEM 1002	Fundamentals of Chemistry IB	6	P CHEM (1001 or 1101) or equivalent N CHEM (1102 or 1902 or 1904 or 1908)	Semester 2

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
CHEM 1101	Chemistry 1A	6	A HSC Chemistry and Mathematics C Recommended concurrent units of study: 6 credit points of Junior Mathematics N CHEM (1001 or 1901 or 1903 or 1909)	Semester 2, Semester 1, Summer
CHEM 1102	Chemistry IB	6	P CHEM (1101 or 1901) or a Distinction in CHEM 1001 or equivalent C Recommended concurrent units of study: 6 credit points of Junior Mathematics N CHEM (1002 or 1902 or 1904 or 1908)	Semester 1, Summer, Semester 2
CHEM 1901	Chemistry 1A (Advanced)	6	P UAI of at least 96.4 and HSC Chemistry result in band 5 or 6, or Distinction or better in a University level Chemistry unit, or by invitation C Recommended concurrent unit of study: 6 credit points of Junior Mathematics N CHEM (1001 or 1101 or 1903 or 1909) NB: Department permission required for enrolment.	Semester 1
CHEM 1902	Chemistry IB (Advanced)	6	P CHEM (1901 or 1903) or Distinction in CHEM1101 or equivalent C Recommended concurrent unit of study: 6 credit points of Junior Mathematics N CHEM (1002 or 1102 or 1904 or 1908) NB: Department permission required for enrolment.	Semester 2
CHEM 1903	Chemistry 1A (Special Studies Program)	6	P UAI of at least 98.7 and HSC Chemistry result in Band 6 C Recommended concurrent unit of study: 6 credit points of Junior Mathematics. N CHEM (1001 or 1101 or 1901 or 1909) NB: Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.Department permission required for enrolment.	Semester 1
CHEM 1904	Chemistry IB (Special Studies Program)	6	P Distinction in CHEM 1903. C Recommended concurrent units of study: 6 credit points of Junior Mathematics. N May not be counted with CHEM (1002 or 1102 or 1902 or 1908). NB: Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.Department permission required for enrolment.	Semester 2

Intermediate units of study

CHEM 2401	Molecular Reactivity and Spectroscopy	6	**P** CHEM (1102 or 1902 or 1904 or 1909 or 1612); 6 credit points of Junior Mathematics N CHEM (2001 or 2101 or 2301 or 2311 or 2312 or 2502 or 2901 or 2903 or 2911 or 2915)	Semester 1
CHEM 2402	Chemical Structure and Stability	6	P CHEM (1102 or 1902 or 1904 or 1909 or 1612); 6 credit points of Junior Mathematics N CHEM (2202 or 2302 or 2902 or 2912 or 2916)	Semester 2
CHEM 2403	Chemistry of Biological Molecules	6	**P** CHEM (1102 or 1902 or 1904 or 1909); 6 credit points of Junior Mathematics N CHEM (2001 or 2901 or 2311 or 2312 or 2903 or 2913) NB: To enrol in Senior Chemistry in 2007 it will be a requirement that students complete CHEM (2401 or 2911 or 2915) and CHEM (2402 or 2912 or 2916). Students are advised that combinations of CHEM2 units that do not meet this requirement will generally not allow progression to Senior Chemistry.	Semester 2
CHEM 2404	Forensic and Environmental Chemistry	6	P CHEM 1102 or 1902 or 1904 or 1909; 6 credit points of Junior Mathematics N CHEM3107 or CHEM3197 NB: To enrol in Senior Chemistry in 2007 it will be a requirement that students complete CHEM (2401 or 2911 or 2915) and CHEM (2402 or 2912 or 2916). Students are advised that combinations of CHEM2 units that do not meet this requirement will generally not allow progression to Senior Chemistry.	Semester 1
CHEM 2911	Molecular Reactivity & Spectroscopy Adv	6	P A WAM of 65 or better and a Credit or better in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. N CHEM (2001 or 2101 or 2301 or 2311 or 2312 or 2401 or 2502 or 2901 or 2903 or 2915)	Semester 1
CHEM 2912	Chemical Structure and Stability (Adv)	6	**P** A WAM of 65 or better and a Credit or better in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. N CHEM (2202 or 2302 or 2402 or 2902 or 2916)	Semester 2
CHEM 2913	Chemistry of Biological Molecules (Adv)	6	**P** CHEM (1902 or 1904 or 1909). 12 credit points of Junior Mathematics. Candidates for the BSc (Molecular Biology & Genetics) must achieve a Credit average in Junior units of study. Candidates for the BSc (Molecular Biotechnology) must achieve a Credit average in Junior units of study and a Distinction average in Junior Chemistry units of study. N CHEM (2001 or 2101 or 2301 or 2311 or 2312 or 2403 or 2502 or 2901 or 2903). NB: This unit of study is available to students in the Bachelor of Science (Molecular Biology and Genetics) and the Bachelor of Science (Molecular Biotechnology) degree programs only.	Semester 2
CHEM 2915	Molecular Reactivity & Spectroscopy SSP	6	P By invitation. High WAM and a Distinction average in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics N CHEM (2001 or 2101 or 2301 or 2311 or 2312 or 2401 or 2502 or 2901 or 2903 or 2911) NB: The number of places in this unit of study is strictly limited and entry is by invitation only. Enrolment is conditional upon available places.Department permission required for enrolment.	Semester 1
CHEM 2916	Chemical Structure and Stability (SSP)	6	P By invitation. High WAM and a Distinction average in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. N CHEM (2202 or 2302 or 2402 or 2902 or 2912) NB: The number of places in this unit of study is strictly limited and entry is by invitation only. Enrolment is conditional upon available places.Department permission required for enrolment.	Semester 2

Senior units of study

CHEM 3110	Biomolecules: Properties and Reactions	6	**P** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 1
CHEM 3111	Organic Structure and Reactivity	6	**P** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 1
CHEM 3112	Materials Chemistry	6	A CHEM 2401 and CHEM 2402. P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 1
CHEM 3113	Catalysis and Sustainable Processes	6	A CHEM2401 and CHEM2402. P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
CHEM 3910	Biomolecules: Properties & Reactions Adv	6	**P** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102))	Semester 1
CHEM 3911	Organic Structure and Reactivity (Adv)	6	P WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 1
CHEM 3912	Materials Chemistry (Adv)	6	A CHEM2401 and CHEM2402. P WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 1
CHEM 3913	Catalysis and Sustainable Process (Adv)	6	A CHEM2401 and CHEM2402. P WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 1
CHEM 3114	Metal Complexes: Medicine and Materials	6	ACHEM2401 andCHEM2402. PCHEM(2001 or2101 or2301 or (2311 and2312) or2401 or2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester2
CHEM 3115	Synthetic Medicinal Chemistry	6	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 2
CHEM 3116	Membranes, Self Assembly and Surfaces	6	A CHEM2401 and CHEM2402. P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 2
CHEM 3117	Molecular Spectroscopy & Quantum Theory	6	A CHEM2401 and CHEM2402. P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 2
CHEM 3914	Metal Complexes: Medic. & Mater. (Adv)	6	A CHEM2401 and CHEM2402. P WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 2
CHEM 3915	Synthetic Medicinal Chemistry (Adv)	6	P WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 2
CHEM 3916	Membranes, Self Assembly & Surfaces (Adv	6	A CHEM2401 and CHEM2402. P WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 2
CHEM 3917	Mol. Spectroscopy & Quantum Theory (Adv)	6	A CHEM2401 and CHEM2402. P WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)).	Semester 2

Computational Science

For a major in Computational Science the minimum requirement is 24 credit points chosen from the core or elective Senior units of study listed for this subject area, of which at least 12 credit points must be from the core Senior units of study.

Senior core units of study

COSC 3011	Scientific Computing	6	A Programming experience in MATLAB P 12 credit points chosen from Junior Mathematics and Statistics, 12 creditpoints of Intermediate units in Science subject areas. N COSC3911, COSC 3001, COSC 3901, PHYS3301,PHYS3901	Semester 1
COSC 3911	Scientific Computing (Advanced)	6	A Programming experience in MATLAB P 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. N COSC3011, COSC 3001, COSC 3901, PHYS3301, PHYS3901	Semester 1
COSC 3012	Parallel Computing & Visualisation	6	A Programming experience in C and MATLAB or equivalent. P 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. N COSC3912, COSC 3002, COSC 3902, COSC3601, PHYS3303, PHYS3933	Semester 2
COSC 3912	Parallel Computing & Visualisation (Adv)	6	A Programming experience in C and MATLAB or equivalent. P 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. N COSC3012, COSC 3002, COSC 3902, COSC3601, PHYS3303, PHYS3933	Semester 2
MATH 3076	Mathematical Computing	6	P 12 credit points of Intermediate Mathematics and one of MATH(1001 or 1003 or 1901 or 1903 or 1906 or 1907) N MATH 3976, MATH3016, MATH3916	Semester 1
MATH 3976	Mathematical Computing (Advanced)	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1903 or 1907) or Credit in MATH 1003 N MATH 3076, MATH 3016, MATH3916	Semester 1

Senior elective units of study

BINF3001, BIOL3006/3906, BIOL3027/3927, GEOS3003/3903, GEOS3004/3904, GEOS3007/3907, GEOS3009, GEOS3016/3916, MATH3063/3963, MATH3078/3978, MULT3306/3606, STAT3011/3911, STAT3012/3912

Computer Science

Junior units of study

INFO 1003	Foundations of Information Technology	6	A Basic computer operations N INFO 1000, INFS1000, IS YS1003, INFO 1903.	Semester 1, Semester 2
INFO 1903	Foundations of Information Tech (Adv)	6	A Basic computer operations P UAI at least that for acceptance into BSc(Adv) degree program. N INFO1003, ISYS1003, INFO1000, INFS1000. NB: Department permission required for enrolment.	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
SOFT 1001	Software Development 1	6	A HSC Mathematics Extension 1 N SOFT 1901, COMP (1001 or 1901), DECO2011	Semester 1, Semester 2
SOFT 1901	Software Development 1 (Adv)	6	A HSC Mathematics Extension 1 Q UAI at least that for acceptance into BSc(Adv) degree program. N May not be counted with SOFT 1001 or COMP (1001 or 1901) NB: Entry requires departmental permission, except for students in BSc(Adv), BCST(Adv) or BIT degreesDepartment permission required for enrolment.	Semester 1, Semester 2
SOFT 1002	Software Development 2	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 N SOFT 1902 or COMP (1002 or 1902) NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 1, Semester 2, Summer
SOFT 1902	Software Development 2 (Adv)	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) and Distinction in one of these. N May not be counted with SOFT 1002 or COMP (1002 or 1902) or DECO2011 NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 1, Semester 2

Intermediate units of study

COMP 2160	Data Structures	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP(2111 or 2811 or 2002 or 2902 or 2860)	Semester 1
COMP 2860	Data Structures (Advanced)	6	**P** [SOFT (1002 or 1902) or COMP (1002 or 1902)] and Distinction in one COMP, SOFT or MATH unit. N COMP(2111 or 281 lor 2002 or 2902 or 2160)	Semester 1
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO 1000 level P (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. N INFO (2000 or 2810 or 2900)	Summer, Semester 1
INFO 2810	Systems Analysis and Modelling (Adv)	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 level P (INFO(1003 or 1903 orl000)orISYS1003orINFS1000orSOFT(1001orl901)orCOMP(1001orl901)or(6creditpoints of COSC units of study) or DECO2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. N INFO (2000 or 2110 or 2900)	Semester 1
INFO 2120	Database Systems 1	6	**P** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC) or DECO2011 N INFO (2005 or 2820 or 2905).	Semester 2
INFO 2820	Database Systems 1 (Advanced)	6	A Basics of data modelling, experience working with information technology tools P INFO(1003 or 1903 or 1000) orISYS1003 orlNFSlOOO or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DEC2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. N INFO (2005 or 2120 or 2905)	Semester 2
NETS 2150	Fundamentals of Networking	6	A Basic computer organization P SOFT(1002 or 1902) or COMP(1001 or 1901) or DECO2011 N NETS (2009 or 2909 or 2850), ELEC (3506 or 3504)	Semester 1
NETS 2850	Fundamentals of Networking (Advanced)	6	A Basic computer organization. P SOFT(1002 or 1902) or COMP(1001 or 1901) or DECO2011 and Distinction in one NETS or SOFT unit. N May not be counted with NETS (2009 or 2909 or 2150) or ELEC (3504 or 3506).	Semester 1
SOFT 2130	Software Construction 1	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). NB: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.	Semester 2, Summer
SOFT 2830	Software Construction 1 (Adv)	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) and Distinction in one of these, or in any SOFT unit at 2000-level or above. N COMP (2004 or 2904) or SOFT (2004 or 2904 or 2130). NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 2

Senior units of study

COMP 3308	Introduction to Artificial Intelligence	6	A Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO 1903 or SOFT 1002 P 18 crpts of 2000-level units. N May not be counted with COMP(3002 or 3902 or 3608).	Semester 1
COMP 3608	Intro, to Artificial Intelligence (Adv)	6	A Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO 1903 or SOFT 1002. P 18 crpts of 2000-level units, and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. N May not be counted with COMP(3002, 3902 or 3308).	Semester 1
COMP 3309	Algorithms	6	A Discrete mathematics. P COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902). N May not be counted COMP(3111 or 3811), COMP(3001 or 3901) or COMP3609.	Semester 1
COMP 3609	Algorithms (Advanced)	6	**A** Discrete mathematics. P COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902), and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. N COMP(3111 or 3811 or 3001 or 3901 or 3309)	Semester 1
MULT 3306	Multimedia Computing and Processing	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not be counted with MULT(3019 or 3919) or MULT(3004 or 3904) or MULT3606 or COMP(3004 or 3904).	Semester 1
MULT 3606	Multimedia Computing & Processing (Adv)	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a COMP or MULT or SOFT unit at 2000-level or above. N MULT(3019 or 3919 or 3004 or 3904 or 3306) or COMP(3004 or 3904)	Semester 1
NETS 3303	Network Protocols & Programming	6	P (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)). N May not be counted with NETS(3007 or 3907), COMP(3007 or3907) or NETS3603.	Semester 1
NETS 3603	Network Protocols & Programming (Adv)	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. N May not be counted with NETS(3007 or 3907), COMP(3007 or3907) or NETS3303.	Semester 1
NETS 3305	Computer and Network Security	6	P (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N NETS(3016 or 3916), NETS3605 or ELEC(5610 or 5616)	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
NETS 3605	Computer and Network Security (Advanced)	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. NNETS(3016 or 3916),NETS3305 or ELEC(5610 or 5616)	Semester 1
SOFT 3301	Software Construction 2	6	P SOFT(2130 or 2830 or 2004 or 2904) or COMP (2004 or COMP2904) N May not be counted with SOFT(3601, 3104, 3804) or COMP(3008 or COMP3908)	Semester 1
SOFT 3601	Software Construction 2 (Advanced)	6	**P** (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2004 or COMP2004 or COMP2904), and Distinction in any 2000-level or above SOFT or INFO unit. N May not be counted with SOFT3301, SOFT3104, SOFT3804, COMP3008 or COMP3908.	Semester 1
SOFT 3300	Software Development Project	6	P INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table Ill(iv) or III(v) of the BIT regulations). N SOFT(3600 or 3200 or 3700)	Semester 1, Semester 2
SOFT 3600	Software Development Project (Advanced)	6	P (INF02110 or INFO 2810 or INFO2000 or INFO2900) and (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2904 or COMP2004 or COMP2904), and 12 crpts of 3000-level IT-related units (from Table Ill(iv) or III(v) of the BIT regulations), and Distinction in any 2000-level or above IT-related unit. N May not be counted together with any of: SOFT (3300 or 3200 or 3700)	Semester 1, Semester 2
COMP 3310	Theory of Computation	6	P COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902). N COMP (2003 or 2903 or 3610)	Semester 2
COMP 3610	Theory of Computation (Advanced)	6	**P** COMP (2160 or 2860 or 2111 or 2811 or 2002 or 2902), and Distinction in a COMP, SOFT, or MATH unit at 2000-level or above. N COMP (2003 or 2903 or 3310)	Semester 2
INFO 3404	Database Systems 2	6	**P** INFO(2120 or 2820 or 2005 or 2905). N May not be counted with INFO (3005 or 3504 or 3905) or COMP (3005 or 3905).	Semester 2
INFO 3504	Database Systems 2 (Adv)	6	**P** INFO (2005 or 2120 or 2820 or 2905),and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above. N May not be counted with INFO (3005 or 3404 or 3905) or COMP (3005 or 3905).	Semester 2
MULT 3307	Interactive Multimedia Systems	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not be counted with SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2
MULT 3607	Interactive Multimedia Systems (Adv)	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a MULT or SOFT or INFO or COMP unit at 2000-level or above. N May not be counted with SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3307.	Semester 2
NETS 3304	Operating System Internals	6	P (ELECl601 orNETS(2008or2908)orCOMP(2001 or 2901) orELEC2601) and(SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not counted with NETS(3009 or 3909 or 3604), COMP(3009 or 3909). NB: Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enrol in this unit.	Semester 2
NETS 3604	Operating Systems Internals (Advanced)	6	P (ELECl601 orNETS(2008or2908)orCOMP(2001 or 2901) orELEC2601) and(SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. N May not counted with NETS(3009 or 3909 or 3304), COMP(3009 or 3909) NB: Students who were not able to do ELECl601, but have the remaining prerequisites, are encouraged to apply for special permission to enroll in this unit.	Semester 2
SOFT 3302	Software Quality Assurance	6	P (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))). N May not be counted with SOFT(3602 or 3103 or 3803)	Semester 2
SOFT 3602	Software Quality Assurance (Adv)	6	P (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))), and Distinction in any 2000-level or above SOFT or INFO unit. N May not be counted with SOFT(3302 or 3103 or 3803) or, COMP(3008 or COMP3908)	Semester 2

Environmental Studies

For a major in Environmental Studies, students are required to complete a minimum of 24 credit points from Senior units of study listed below, including at least 12 credit points from Senior ENVI units.

Junior units of study

Students are recommended to take at least one of the following junior units of study;

GEOG1001, GEOG1002, GEOL1001, GEOL1002

Intermediate units of study

The completion of at least one of the following units os study is highly recommended:

ENVI 2111	Conservation Biology and Applied Ecology	6	P 24 credit points of Junior Science units, including 12 credit points of Junior Biology NENVI2001	Semester 1
ENVI 2112	Atmospheric Processes and Climate	6	P 24 credit points of Junior Science units, including 12 credit points of Junior Chemistry or Physics N ENVI2002	Semester 2

GEOG2411, GEOG2421, GEOG2511, GEOG2521

Senior units of study

ENVI 3111	Environmental Law and Ethics	6	A Intermediate Environmental Science. P 12 credit points of Intermediate Science or Agriculture units. NENVI3001,ENVI3003.	Semester 1
ENVI 3112	Environmental Assessment	6	A Intermediate Environmental Science. P 12 credit points of Intermediate Science or Agriculture units. N ENVI3002, ENVI3004.	Semester 2
ENVI 3113	Environmental Economics and Planning	6	A Intermediate Environmental Science. P 12 credit points of Intermediate Science or Agriculture units. NENVI3001	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
ENVI 3114	Energy and the Environment	6	A Junior Physics or Intermediate Environmental Science. P 12 credit points of Intermediate Science or Agriculture units. N ENVI3001, PHYS3600.	Semester 2

GEOG3521/3921, GEOS3014/3914, GEOS3018/3918, GEOS3511/3911, GEOS3522/3922

Financial Mathematics and Statistics

For a major in Financial Mathematics and Statistics, students are required to complete:

Junior units of study

At least 12 credit points of Junior units of study from the Science Subject Area of Mathematics including:

(i) MATH (1001 or 1901) and MATH (1002 or 1902) and MATH (1003 or 1903) and MATH (1005 or 1905)

Core Intermediate units of study

18 credit points from the following units of study:

(i) MATH (2070 or 2970); and

(ii) STAT (2011 or 2911) and STAT (2012 or 2912).

Senior units of study

At least 24 credit points comprising the following units of study:

(i) MATH (3075 or 3975) and STAT (3011 or 3911) and STAT (3012 or 3912)

(ii) One of the following units of study:- STAT(3013 or 3913), STAT (3014 or 3914), MATH (3078 or 3978), MATH (3076 or 3976), MATH 3067 or INFO (3404 or 3504)

Geography

For a major in Geography, the minimum requirement is 24 credit points from Senior units of study listed below which must include GEOS3015 and GEOS3018 OR at least 12 credit points from the following units: GEOS3511, GEOS3512, GEOS3513, GEOS3514, GEOG3521 and GEOS3522

Junior units of study

GEOG 1001	Biophysical Environments	6		Semester 1
GEOG 1002	Human Environments	6		Semester 2

Intermediate units of study

GEOG 2311	Landscape Processes	6	P 36cp of Junior units of study, including GEOGlOOl or ENVI (1001 or 1002), or GEOL (1001 or 1002). Students enrolled in the Bachelor of Resource Economics should have 36cp from Junior units of study in Biology (or Land and Water Science), Chemistry and Mathematics. N GEOG2001	Semester 1
GEOG 2411	Environmental Change and Human Response	6	P 36 cp of Junior units of study, including GEOG (1001 or 1002) or ENVI (1001 or 1002) or GEOL (1001 or 1002) NGEOG2101	Semester 1
GEOG 2511	Economic and Political Geography	6	**P** 36 credit points of Junior units of study, including GEOG (1001 or 1002) or ENVI (1001 or 1002) or ECOP (1001 or 1002) N GEOG2201	Semester 1
GEOG 2321	Fluvial and Groundwater Geomorphology	6	P GEOG(2311 or 2001) or 36 credit points of Junior study including GEOGlOOl or ENVI (1001 or 1002) or GEOL (1001 or 1002 or 1501). Students in the Bachelor of Resource Economics should have 36 credit points of study in Biology (or Land and Water Science), Chemistry and Mathematics. Students in the Bachelor of Land and Water Science should have ENVI 1002, 12 credit points of Chemistry, 6 credit points of Biology, BIOM1002. N GEOG (2002 or 2302 or 2303) or MARS2002 or MARS2006	Semester 2
GEOG 2421	Resource and Environmental Management	6	P 36cp of Junior Units of Study, including GEOG (1001 or 1002) or ENVI (1001 or 1002) N GEOG2102	Semester 2
GEOG 2521	Urban and Cultural Geography	6	P 36 credit points of Junior units of study, including GEOG (1001 or 1002) or ENVI (1001 or 1002) or ECOP (1001 or 1002) N GEOG2202	Semester 2

Senior units of study

GEOS 3009	Coastal Environments & Processes	6	**P** (6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) N GEOS3909, MARS3003, MARS3105. NB: * Geoscience is the disciplines of Geography, Geology and Geophysics.	Semester 1
GEOS 3909	Coastal Environments and Processes (Adv)	6	P Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) N GEOS3009, MARS3003, MARS3105 NB: A distinction average in prior Geography or Geology units is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.	Semester 1
GEOS 3015	Environmental Geomorphology	6	A Intermediate geomorphology/ physical geography/ geology. P 24 credit points of Intermediate units, including 6 credit points of Intermediate Geography. N GEOS3915	Semester 2
GEOS 3915	Environmental Geomorphology (Advanced)	6	P Distinction average in 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study. N GEOS3015 NB: Department permission required for enrolment.	Semester 2
GEOS 3014	GIS in Coastal Management	6	P MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **N** GEOS3914, MARS3104. NB: * Geoscience is the disciplines of Geography, Geology and Geophysics.	Semester 2

Unit of Study		CP	A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition	Session
GEOS 3914	GIS in Coastal Management (Advanced)	6	**P** Distinction average in 12 credit points of intermediate geography or geology units or 12 credit points of intermediate marine science units. N GEOS3014, MARS3104 NB: A distinction average in prior Geography, Geology or Marine Science units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.Department permission required for enrolment.	Semester 2
GEOS 3018	Rivers: Science, Policy and Management	6	P (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) N GEOS3918	Semester 1
GEOS 3918	Rivers: Science and Management (Adv)	6	P Distinction average in (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) NGEOS3018	Semester 1
GEOS 3511	Understanding Australia's Regions	6	P 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. NGEOS3911	Semester 1
GEOS 3911	Understanding Australia's Regions (Adv)	6	P Distinction average in 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. N GEO S3 511 NB: Department permission required for enrolment.	Semester 1
GEOS 3512	Contemporary Global Geographies	6	P 6 credit points of Intermediate units of study in Geography. N GEOS3912	Semester 1
GEOS 3912	Contemporary Global Geographies (Adv)	6	P Distinction in 6 credit points of Intermediate units of study in Geography. N GEOS3512 NB: Department permission required for enrolment.	Semester 1
GEOS 3053	Asia-Pacific Field School-Assessment A	6	P 6 credit points of Intermediate units of study in Geography. C GEOS3054 N GEOG3201, GEOS3953 NB: Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.Department permission required for enrolment.	S1 Intensive
GEOS 3953	Asia-Pacific Field School-A (Adv)	6	P Distinction average in 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study. C GEOS3954 N GEOS3053 NB: Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.Department permission required for enrolment.	S1 Intensive
GEOS 3054	Asia-Pacific Field School-Assessment B	6	**P** 6 credit points of Intermediate units of study in Geography. C GEOS3053 N GEOG3201, GEOS3954 NB: Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.Department permission required for enrolment.	S1 Intensive
GEOS 3954	Asia-Pacific Field School-B (Adv)	6	**P** Distinction average in 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study C GEOS3953 N GEOS3054 NB: Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.Department permission required for enrolment.	S1 Intensive
GEOS 3522	Cities and Citizenship	6	**P** 6 credit points of intermediate geography. N GEOG3203, GEOS3922	Semester 2
GEOS 3922	Cities and Citizenship (Advanced)	6	**P** Distinction average in 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. N GEOS3522	Semester 2
GEOG 3521	Sustainable Cities	6	**P** 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. N geog3921, GEOG3202	Semester 2
GEOG 3921	Sustainable Cities (Adv)	6	**P** Distinction average 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. N GEOG3521, GEOG3202	Semester 2

GEOS3016/3916 and GEOS3017/3917 may count towards a major in Geography. Their short descriptions appear with the Geology & Geophysics Units.

Geology & Geophysics

For a major in Geology and Geophysics, the minimum requirement is 24 credit points from Senior units listed in this subject area, which must include GEOS3008.

Junior units of study

GEOL 1001	Earth and its Environment	6	A No previous knowledge of Geology assumed N GEOL 1501	Semester 1
GEOL 1002	Earth Processes and Resources	6	A No previous knowledge of Geology assumed N GEOL 1501	Semester 2
GEOL 1902	Earth Materials and Resources (Advanced)	6	A No previous knowledge of Geology assumed N GEOL 1002 NB: Departmental permission is required for enrolment; a UAI above 93 or a Distinction in GEOL 1001 is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.Department permission required for enrolment.	Semester 2

Intermediate units of study

GEOL 2111	Volcanic Hazards and Solutions	6	**P** GEOL 1002 or ENVI1002 or equivalent and 24 credit points of Junior Science units of study. **N** GEOL2001,CIVL2409	Semester 1
GEOL 2911	Volcanic Hazards & Solutions (Advanced)	6	P GEOL (1002 or 1902) or ENVI1002 or equivalent N GEOL2111, GEOL2001 NB: Department permission required for enrolment. A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.Department permission required for enrolment.	Semester 1
GEOL 2112	Environmental Geology and Climate Change	6	P 24 credit points of Science units of study N GEOL2004	Semester 1
GEOL 2123	Geological Methods	6	A Ability to identify common rocks and rock-forming minerals; ability to read and interpret simple geological maps and predict 3D relationships from a map; knowledge of the geological time scale; cognizance of the main chemical and physical processes involved in: mineral formation; modification of the interior of the Earth; common surface processes and sedimentary environments; volcanoes; and metamorphism P GEOL (2111, 2911 or 1501) and 18 credit points of Engineering or Science units of study N GEOL (2202 or 2002 or 2005)	Semester 2

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
GEOL 2923	Geological Methods (Advanced)	6	**P** GEOL2111 or GEOL2911 N GEOL2123 NB: Department permission required for enrolment. A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.Department permission required for enrolment.	Semester 2
GEOL 2124	Fossils and Time	6	**P** 24 credit points of Junior Science units of study N GEOL2003, CIVL2409	Semester 2

Senior units of study

GEOS 3003	Dynamics of Continents and Basins	6	P (6 credit points of Intermediate Geoscience units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) N GEOL3101, GEOS3903	Semester la
GEOS 3903	Dynamics of Continents & Basins (Adv)	6	**P** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) N GEOL3101, GEOS3003 NB: A Distinction in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.	Semester 1
GEOS 3004	Geophysics, Imaging, Oil/Ore Production	6	P 12 credit points of Intermediate Science units of study or CIVL2409 N GEOP3202, GEOS3904	Semester 2a
GEOS 3904	Geophysics, Imaging, Oil/Ore Prod (Adv)	6	**P** Distinction average in 24 credit points of Intermediate Science Units, or Distinction in (GEOL2923 or CIVL2409) N GEOL3202, GEOS3004 NB: A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.Department permission required for enrolment.	Semester 2a
GEOS 3006	Mineral Deposits & Spatial Data Analysis	6	P 12 credit points of Intermediate Science units of study or CIVL2409 N GEOL3103, GEOS3906	Semester 2b
GEOS 3906	Mineral Deposits & Spatial Data Advanced	6	**P** Distinction average in 12 credit points of Intermediate Science units of study or CIVL2409. N GEOS3006 NB: A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.Department permission required for enrolment.	Semester 2b
GEOS 3007	Remote Sensing: Imaging the Earth	6	P 12 credit points of Intermediate Science units of study or CIVL2409 N GEOL3101	Semester lb
GEOS 3907	Remote Sensing: Imaging the Earth (Adv)	6	A GEOL (2001 or 2202) P Distinction average in 16 credit points of Intermediate Science subjects or CIVL2409 NGEOL3101orGEOS3007	Semester lb
GEOS 3008	Field Geology and Geophysics	6	P 12 credit points of Intermediate GEOS units N GEOL3103, GEOS3908	S2 Intensive
GEOS 3908	Field Geology and Geophysics (Advanced)	6	**P** Distinction average in 12 credit points of Intermediate GEOS units N GEOS3008 NB: A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.Department permission required for enrolment.	S2 Intensive
GEOS 3009	Coastal Environments & Processes	6	**P** (6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) N GEOS3909, MARS3003, MARS3105. NB: * Geoscience is the disciplines of Geography, Geology and Geophysics.	Semester 1
GEOS 3909	Coastal Environments and Processes (Adv)	6	P Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) N GEOS3009, MARS3003, MARS3105 NB: A distinction average in prior Geography or Geology units is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.	Semester 1
GEOS 3016	Seafloor Processes & Imaging	6	P 12 credit points of Intermediate Geoscience or ((one of MARS2005 & MARS2905) and (one of MARS2006 & MARS2906)) N GEOS3916, MARS3005, MARS3106. NB: * Geoscience is the disciplines of Geography, Geology and Geophysics.	Semester 2
GEOS 3916	Seafloor Processing and Imaging (Adv)	6	P Ditinction average in (12 credit points of Intermediate Geoscience or ((one of MARS2005 & MARS2905) and (one of MARS2006 & MARS2906))) N GEOS3016, MARS3005, MARS3106 NB: Department permission required for enrolment.	Semester 2
GEOS 3017	Global Energy-Exploration & Exploitation	6	P MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **N** GEOS3917, MARS3008. NB: * Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.	Semester 1
GEOS 3917	Global Energy Exploration (Advanced)	6	**P** Distinction average in MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. N GEOS3017, MARS3008 NB: * Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.	Semester 1

GEOS3007/3907, GEOS3014/3914, GEOS3015/3915 and GEOS3018/3918 may count towards a major in Geology & Geophysics. Their short descriptions appear with the Geography Units.

History and Philosophy of Science

For a major in History and Philosophy of Science, the minimum requirement is 24 credit points from Senior units of study listed in this subject area. Students must include the core unit of study HPSC 3022 Science and Society (6cp) or HPSC 3003 Social Relations of Science (4cp) (last offered in 2003 and now superceded by HPSC 3022).

Junior unit of study

HPSC 1000	Bioethics	6	N HPSC 1900 NB: This Junior unit of study is highly recommended to Intermediate and Senior Life Sciences students.	Semester 1
HPSC 1900	Bioethics (Advanced)	6	NHPSC1000 NB: Enrolment in this unit is limited, and will be on a first-come first-served basis.	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
Intermediate units of study				
HPSC 2100	The Birth of Modern Science	6	P 24 credit points of Junior units of study N HPSC (2002 or 2900)	Semester 1
HPSC 2900	The Birth of Modern Science (Advanced)	6	P Enrolment in the Talented Student Program or 24 credit points of Junior study with a Distinction average N HPSC (2002 or 2100) NB: Enrolment in this unit is limited, and will be on a first-come, first-served basis.	Semester 1
HPSC 2101	What Is This Thing Called Science?	6	P 24 credit points of Junior units of study N HPSC (2001 or 2901)	Semester 2, Summer
HPSC 2901	What Is This Thing Called Science? (Adv)	6	P Enrolment in the Talented Student Program or 24 credit points of Junior study with a Distinction average N HPSC (2002 or 2100) NB: Enrolment in this unit is limited and will be on a first-come, first-served basis.	Semester 2
Senior units of study				
HPSC 3002	History of Biological/Medical Sciences	6	A HPSC (2001 and 2002) or HPSC (2100 and 2101) P At least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units	Semester 1
HPSC 3022	Science and Society	6	A HPSC (2100 and 2101) or HPSC (2001 and 2002). P At least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units. N HPSC3003 NB: This unit is a requirement for HPS majors.	Semester 1
HPSC 3023	Psychology & Psychiatry: History & Phil	6	A Basic knowledge about the history of modern science as taught in HPSC2100 AND the principles of philosophy of science as taught in HPSC2101 AND knowledge of the various sub-disciplines within Psychology. P (at least 8 credit points of intermediate HPSC Units of study) OR (a CR or above in one HPSC intermediate Unit of Study) OR (12 intermediate credit points in psychology). N PSYC3202	Semester 1
HPSC 3016	Mathematical Sciences: HPS	6	A HPSC (2100 and 2101) or HPSC (2001 and 2002) P At least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units. N HPSC (3001 or 3106)	Semester 2
HPSC 3024	Science and Ethics	6	P At least 24 credit points of Intermediate or Senior units of study N HPSC3007	Semester 2

HPSC3015 History and Philosophy of Physics will not be available in 2006. HPSC3021 History and Philosophy of Physics will not be available in 2006.

Immunobiology

For a major in Immunobiology, the minimum requirement is 24 credit points comprising:

(i) IMMU3102 Cellular and Molecular Immunology and IMMU3202 Immunology in Human Disease; and

(ii) a minimum of 12 credit points from the following Senior elective units of study: BCHM 3071/3971, BCHM 3081/3981, BCHM3072/3972, BCHM 3082/3982, BIOL 3018/3918, BIOL 3026/3926, BIOL 3027/3927, CPAT 3201, CPAT 3202, MICR 3011/3911, PHSI 3005/3905, PHSI 3006/3906, VIRO 3001/3901, VIRO3002. Information on Virology units can be found with Mircrobiology units.

Intermediate units of study

The completion of MBLG (2001 or 2101 or 2901) is highly recommended.

IMMU 2101	Introductory Immunology	6	A Junior Biology and Junior Chemistry. P 24 credit points of Junior units of study from any of the Science discipline areas. N IMMU 2001, BMED2506, BMED2807 NB: This is a prerequisite unit of study for IMMU3102 and IMMU3202. The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 1

Senior Core units of study

IMMU 3102	Molecular and Cellular Immunology	6	**A** Intermediate biochemistry and molecular biology and genetics. P IMMU 2101 or IMMU2001 or BMED 2807 or BMED2506 and 6CP of Intermediate units of study from Biochemistry, or Biology or Microbiology or Molecular Biology and Genetics or Pharmacology or Physiology. N IMMU 3002, BMED 3003 NB: The completion of 6 CP of MBLG units of study is highly recommended.Concurrent study of IMMU 3202 Immunology in Human Disease is strongly recommended.	Semester 2
IMMU 3202	Immunology in Human Disease	6	A Intermediate biochemistry and molecular biology and genetics. P IMMU 2101 or IMMU2001 or BMED2807 or BMED2506 and 6CP of Intermediate units of study from Biochemistry, or Biology or Microbiology or Molecular Biology and Genetics or Pharmacology or Physiology. N IMMU 3002, BMED3003 NB: The completion of 6CP of MBLG units of study is highly recommended.Concurrent study of IMMU3102 Molecular and Cellular Immunology is very strongly recommended.	Semester 2

Information Systems

For a major in Information Systems, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.

Junior units of study

INFO 1003	Foundations of Information Technology	6	A Basic computer operations N INFO 1000, INFS1000, IS YS1003, INFO 1903.	Semester 1, Semester 2
INFO 1903	Foundations of Information Tech (Adv)	6	A Basic computer operations P UAI at least that for acceptance into BSc(Adv) degree program. N INFO1003, ISYS1003, INFO1000, INFS1000. NB: Department permission required for enrolment.	Semester 1

Intermediate units of study

INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at IS YS 1003 or INFO 1000 level P (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. N INFO (2000 or 2810 or 2900)	Summer, Semester 1

Unit of Study		CP	A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition	Session
INFO 2810	Systems Analysis and Modelling (Adv)	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 level P (INFO(1003 or 1903 orl000)orISYS1003orINFS1000orSOFT(1001orl901)orCOMP(1001orl901)or(6creditpoints of COSC units of study) or DECO2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. N INFO (2000 or 2110 or 2900)	Semester 1
INFO 2120	Database Systems 1	6	P INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC) or DECO2011 N INFO (2005 or 2820 or 2905).	Semester 2
INFO 2820	Database Systems 1 (Advanced)	6	A Basics of data modelling, experience working with information technology tools P INFO(1003 or 1903 or 1000) orISYS1003 orlNFSlOOO or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DEC2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. N INFO (2005 or 2120 or 2905)	Semester 2
ISYS 2140	Information Systems	6	A Understanding of the roles and functions of information technology tools for document processing, modelling, database management etc. Experience in the use of these tools to solve practical problems and to present the results effectively. Awareness of the main concepts of programming and of a program running in a computer (a process) PINFO(1003 or 1903 or 1000) orISYS1003 orlNFSlOOO. NISYS (2006 or 2007)	Semester 1

Senior units of study

INFO 3402	Management of IT Projects and Systems	6	P INFO (2000 or 2110 or 2810 or 2900). N May not be counted with ISYS (3000 or 3012).	Semester 1
ISYS 3401	Analytical Methods & Information Systems	6	P ISYS (2140 or 2006) and INFO (2000 or 2110 or 2810 or 2900) and (MATH(1005 or 1015 or 1905) or STAT 1021) and (ARIN1000 or ENGL 1050 or ENGL 1005 orLNGSlOOl orLNGS1002 orLNGS1005 or any HPSC unit) N May not be counted with ISYS3015	Semester 1
ISYS 3403	IT Systems in Arts and Humanities	6	P INFO (2000 or 2110 or 2810 or 2900) and INFO (2005 or 2120 or 2820 or 2905). N May not be counted with ISYS3113 or EBUS(3002 or 3004).	Semester 1
INFO 3404	Database Systems 2	6	P INFO(2120 or 2820 or 2005 or 2905). N May not be counted with INFO (3005 or 3504 or 3905) or COMP (3005 or 3905).	Semester 2
INFO 3504	Database Systems 2 (Adv)	6	P INFO (2005 or 2120 or 2820 or 2905),and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above. N May not be counted with INFO (3005 or 3404 or 3905) or COMP (3005 or 3905).	Semester 2
ISYS 3400	Information Systems Project	6	**P** (INFO3402 or ISYS3012) and (ISYS (3401 or 3015) or ARIN2000). N May not be counted with ISYS3207	Semester 2

Marine Science

For a major in Marine Science, the minimum requirement is 24 credit points of Senior units listed in this subject area, which must include at least one BIOL and one GEOS unit. Intermediate units leading to a Marine Science major are 12 credit points of Intermediate MARS or BIOL units, including MARS2006 or MARS2906.

Intermediate units of study

MARS **2005**	Global Oceans (Introduction)	6	**P** 24 credit points of Junior units of study from Science Discipline Areas. N MARS2001 NB: This is a qualifying unit for some Senior Marine Science units. Some Senior electives may have additional pre-requisites.	Semester 1
MARS **2905**	Global Oceans (Introduction) (Advanced)	6	P 24 credit points of Junior Science units. N MARS2005, MARS2001. NB: This unit of study is available to advanced students only.	Semester 1
MARS **2006**	Marine Ecosystems and Geomorphology	6	A MARS2005 P 24 credit points of Junior units of study from Science Discipline Areas. N MARS2002 and GEOG2002 NB: This is a qualifying unit for Senior Marine Science units. Some Senior electives may have additional prerequisites.	Semester 2
MARS **2906**	Marine Ecosystems and Geomorphology Adv	6	P 24 credit points of Junior units of study from Science Discipline Areas. N MARS2006, MARS2002, GEOG2002. NB: This unit of study is available to advanced students only.	Semester 2
MARS **2007**	Marine Science Field School	6	**P** 24 credit points of Junior Science units C MARS (2005 or 2905). NMARS2003 NB: This unit of study is available to students in the Bachelor of Science (Marine Science) only.	SI Intensive
MARS **2907**	Marine Science Field School (Advanced)	6	P 24 credit points of Junior Science units. C MARS (2005 or 2905) NMARS2007, MARS2003. NB: This unit of study is available to advanced students only.	SI Intensive

Senior units of study

BIOL3006/3906, BIOL3008/3908, BIOL3007/3907, BIOL3011/3911, BIOL3013/3913

GEOS3003/3903, GEOS3009/3909, GEOS3014/3914, GEOS3016/3916, GEOS3017/3917, GEOS3018/3918

Mathematics

For a major in Mathematics, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.

Junior units of study

MATH **1011**	Life Sciences Calculus	3	A HSC Mathematics N MATH (1111 or 1001 or 1901 or 1906).	Semester 1, Summer
MATH **1014**	Introduction to Linear Algebra	3	A HSC Mathematics or MATH 1111 N MATH 1012, MATH 1002, MATH 1902	Semester 2
MATH **1111**	Introduction to Calculus	6	A At least Year 10 Mathematics N MATH 1001, MATH 1901, MATH 1011, MATH 1906 NB: Students with HSC Mathematics/Extension 1/Extension 2 (or equivalent) are prohibited.	Semester 1
MATH **1013**	Differential and Difference Equations	3	A HSC Mathematics or MATH 1111 N MATH (1003 or 1903 or 1907).	Semester 2
MATH **1015**	Life Science Statistics	3	A HSC Mathematics N MATH (1005 or 1905) or STAT (1021 or 1022) or ECMT Junior units of study.	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
MATH 1001	Differential Calculus	3	A HSC Mathematics Extension 1 N MATH 1011 or 1901 or 1906 or 1111	Semester 1, Summer
MATH 1002	Linear Algebra	3	A HSC Mathematics Extension 1 N MATH 1902 or 1012 or 1014	Semester 1, Summer
MATH 1003	Integral Calculus and Modelling	3	A HSC Mathematics Extension 2 or MATH 1001 or MATH 1111 N MATH 1013 or 1903 or 1907	Semester 2, Summer
MATH 1004	Discrete Mathematics	3	A HSC Mathematics Extension 1 N MATH 1904 or MATH2011	Semester 2, Summer
MATH 1005	Statistics	3	A HSC Mathematics N MATH (1905 or 1015) or ECMT Junior units of study or STAT (1021 or 1022)	Semester 2, Summer
MATH 1901	Differential Calculus (Advanced)	3	A HSC Mathematics Extension 2 N MATH (1111 or 1011 or 1001 or 1906)	Semester 1
MATH 1902	Linear Algebra (Advanced)	3	A HSC Mathematics Extension 2 N MATH (1002 or 1012 or 1014)	Semester 1
MATH 1903	Integral Calculus and Modelling Advanced	3	A HSC Mathematics Extension 2 or Credit or better in MATH (1001 or 1901) N MATH (1003 or 1013 or 1907)	Semester 2
MATH 1904	Discrete Mathematics (Advanced)	3	A HSC Mathematics Extension 2 N MATH 1004 or MATH2011	Semester 2
MATH 1905	Statistics (Advanced)	3	A HSC Mathematics Extension 2 N MATH (1005 or 1015) or ECMT Junior units of study or STAT (1021 or 1022)	Semester 2
MATH 1906	Mathematics (Special Studies Program) A	3	P UAI of at least 98.5 and result in Band E4 HSC Mathematics Extension 2; by invitation N MATH (1111 or 1001 or 1011 or 1901). NB: Department permission required for enrolment.	Semester 1
MATH 1907	Mathematics (Special Studies Program) B	3	P Distinction in MATH1906; by invitation. N MATH (1003 or 1013 or 1903). NB: Department permission required for enrolment.	Semester 2

Intermediate units of study

MATH 2061	Linear Mathematics and Vector Calculus	6	P MATH (1111 or 1001 or 1901 or 1906) and MATH (1014 or 1002 or 1902) and MATH (1003 or 1903 or 1907) N MATH (2001 or 2901 or 2002 or 2902 or 2961 or 2067)	Summer, Semester 1
MATH 2063	Math Computing and Nonlinear Systems	6	P MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) N MATH (2003 or 2903 or 2006 or 2906 or 2963)	Semester 1
MATH 2069	Discrete Mathematics and Graph Theory	6	P 6 credit points of Junior level Mathematics N MATH (2011 or 2009 or 2969)	Semester 1
MATH 2961	Linear Mathematics & Vector Calculus Adv	6	P MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) N MATH (2001 or 2901 or 2002 or 2902 or 2061 or 2067)	Semester 1
MATH 2962	Real and Complex Analysis (Advanced)	6	P MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) N MATH (2007 or 2907)	Semester 1
MATH 2963	Math Computing & Nonlinear Systems (Adv)	6	P MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) N MATH (2003 or 2903 or 2006 or 2906 or 2063)	Semester 1
MATH 2969	Discrete Mathematics & Graph Theory Adv	6	P 9 credit points of Junior Mathematics (advanced level or Credit at the normal level) N MATH (2011 or 2009 or 2069)	Semester 1
MATH 2916	Working Seminar A (SSP)	3	P By invitation, High Distinction average over 12 credit points of Advanced Junior Mathematics NB: Department permission required for enrolment.	Semester 1
MATH 2065	Partial Differential Equations (Intro)	6	P MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) N MATH (2005 or 2905 or 2965 or 2067)	Semester 2
MATH 2068	Number Theory and Cryptography	6	P 9 credit points of Junior level Mathematics including MATH (1002 or 1902) N MATH (3024 or 3009)	Semester 2
MATH 2070	Optimisation and Financial Mathematics	6	A MATH (1003 or 1903 or 1907) P MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) N MATH (2010 or 2033 or 2933 or 2970), ECMT3510 NB: Students may enrol in both MATH2070 and MATH3075 in the same semester	Semester 2
MATH 2965	Partial Differential Equations Intro Adv	6	P MATH (2961 or Credit in 2061) or {MATH (2901 or Credit in 2001) and MATH (2902 or Credit in 2002)} N MATH (2005 or 2905 or 2065 or 2067)	Semester 2
MATH 2968	Algebra (Advanced)	6	P 9 credit points of Junior Mathematics (advanced level or Credit at normal level) including (MATH 1902 or Credit in MATH 1002) N MATH (2908 or 2918 or 2008)	Semester 2
MATH 2970	Optimisation & Financial Mathematics Adv	6	A MATH (1903 or 1907) or Credit in MATH1003 P MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) N MATH (2010 and 2033 and 2933 and 2070) NB: Students may enrol in both MATH2970 and MATH3975 in the same semester	Semester 2
MATH 2917	Working Seminar B (SSP)	3	P By invitation, High Distinction average over 12 credit points of Advanced Junior Mathematics NB: Department permission required for enrolment.	Semester 2

Senior units of study

MATH 3063	Differential Equations & Biomaths	6	A MATH2061 P 12 credit points of Intermediate Mathematics N MATH3020, MATH3920, MATH3003, MATH3923, MATH3963	Semester 1
MATH 3065	Logic and Foundations	6	P 6 credit points of Intermediate Mathematics N MATH3005	Semester 1
MATH 3068	Analysis	6	**P** 12cp of Intermediate Mathematics N MATH3008, MATH2007, MATH2907, MATH2962	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
MATH 3076	Mathematical Computing	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1001 or 1003 or 1901 or 1903 or 1906 or 1907) N MATH 3976, MATH3016, MATH3916	Semester 1
MATH 3961	Metric Spaces (Advanced)	6	A MATH2961 or MATH2962 P 12 credit points of Intermediate Mathematics units N MATH3901, MATH3001	Semester 1
MATH 3962	Rings, Fields and Galois Theory (Adv)	6	AMATH2961 P 12 credit points of Intermediate Mathematics N MATH3062, MATH3902, MATH3002 NB: Students are advised to take MATH2968 before attempting this unit.	Semester 1
MATH 3963	Differential Equations & Biomaths (Adv)	6	AMATH2961 P 12 credit points of Intermediate Mathematics NMATH3020,MATH3920,MATH3003, MATH3923, MATH3063	Semester 1
MATH 3974	Fluid Dynamics (Advanced)	6	A MATH2961, MATH2965 P 12 credit points of Intermediate Mathematics with average grade of at least Credit NMATH3914	Semester 1
MATH 3976	Mathematical Computing (Advanced)	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1903 or 1907) or Credit in MATH 1003 N MATH 3076, MATH 3016, MATH3916	Semester 1
MATH 3061	Geometry and Topology	6	**P** 12 credit points of Intermediate Mathematics N MATH3001, MATH3006	Semester 2
MATH 3062	Algebra and Number Theory	6	**P** 12 credit points of Intermediate Mathematics N MATH3962, MATH3902, MATH3002, MATH3009 NB: Students are advised to take MATH(2068 or 2968) before attempting this unit.	Semester 2
MATH 3067	Information and Coding Theory	6	**P** 12 credit points of Intermediate Mathematics N MATH3007, MATH3010	Semester 2
MATH 3075	Financial Mathematics	6	**P** 12 credit points of Intermediate Mathematics N MATH3975, MATH 3015, MATH3933	Semester 2
MATH 3078	PDEs and Waves	6	A MATH(2061 /2961) and MATH(2065/2965) P 12 credit points of Intermediate Mathematics N MATH3978, MATH3018, MATH3921	Semester 2
MATH 3964	Complex Analysis with Applications (Adv)	6	**A** MATH2962 P 12 credit points of Intermediate Mathematics N MATH3904, MATH3915	Semester 2
MATH 3966	Modules and Group Representations (Adv)	6	**A** MATH3962 P 12 credit points of Intermediate Mathematics N MATH3906, MATH3907	Semester 2
MATH 3968	Differential Geometry (Advanced)	6	**A** At least 6 credit points of Advanced Mathematics units of study at Intermediate or Senior level. P 12 credit points of Intermediate Mathematics, including MATH2961 N MATH3903	Semester 2
MATH 3969	Measure Theory & Fourier Analysis (Adv)	6	**A** At least 6 credit points of Advanced Mathematics units of study at Intermediate or Senior level P 12 credit points Intermediate Mathematics N MATH3909	Semester 2
MATH 3975	Financial Mathematics (Advanced)	6	P 12 credit points of Intermediate Mathematics with at least Credit average N MATH3933, MATH3015, MATH3075	Semester 2
MATH 3977	Lagrangian & Hamiltonian Dynamics (Adv)	6	P 12 credit points of Intermediate Mathematics with at least Credit average N MATH2904, MATH2004, MATH3917	Semester 2
MATH 3978	PDEs and Waves (Advanced)	6	A MATH(2061 /2961) and MATH(2065/2965) P 12 credit points of Intermediate Mathematics with at least Credit average N MATH3078, MATH3018, MATH3921	Semester 2

Medicinal Chemistry

For a major in Medicinal Chemistry, the minimum requirement is 24 credit points comprising:

(i) PCOL3011/3911 andPCOL3012/3912; and

(ii) 12 credit points from Senior Chemistry units of study.

Note that there are Intermediate prerequisites for the core Senior units of study. Junior and Intermediate units of study should be selected to permit progression to the required Senior units of study.

Microbiology

For a major in Microbiology, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.

Intermediate units of study

The completion of MBLG (1001 or 2771 or 2871 or 2001 or 2101) is highly recommended.

MICR 2021	Introductory Microbiology	6	**P** (6 credit points of Junior Biology or MBLG 1001) and 6 credit points of Junior Chemistry N MICR (2921 or 2024 or 2001 or 2901 or 2003 or 2007 or 2011 or 2909) NB: Students are very strongly recommended to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2022 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG 1001 or PLNT (2001 or 2901).	Semester 1
MICR 2921	Introductory Microbiology (Advanced)	6	P 6 credit points of Junior Chemistry and Distinction in 6 credit points of Junior Biology or MBLG 1001 N MICR (2021 or 2024 or 2001 or 2901 or 2003 or 2007 or 2011 or 2909) NB: Students are very strongly recommended to complete MICR(2021 or 2921 or 2024) before enrolling in MICR2022 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG 1001 orPLNT(2001or2901).	Semester 1
MICR 2022	Applied Microbiology	6	A MICR (2021 or 2921 or 2024) P (6 credit points of Junior Biology or MBLG 1001) and 6 credit points of Junior Chemistry. N MICR (2922 or 2002 or 2902 or 2004 or 2008 or 2012 or 2909) NB: Students are very strongly recommended to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2022 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG 1001 or PLNT (2001 or 2901).	Semester 2
MICR 2922	Applied Microbiology (Advanced)	6	A MICR (2021 or 2921 or 2024) P 6 credit points of Junior Chemistry and Distinction in 6 credit points of Junior Biology or MICR (2021 or 2921) or MBLG units. N MICR (2022 or 2002 or 2902 or 2004 or 2008 or 2012 or 2909) NB: Students are very strongly recommended to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2922 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG 1001 or PLNT (2001 or 2901).	Semester 2

Unit of Study		CP	A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition	Session
MICR 2024	Microbes in the Environment	6	**P** 30 credit points of Junior Science or Faculty of Agriculture, Food and Natural Resource units including 6 credit points of Junior Biology. N MICR (2021 or 2921 or 2001 or 2901 or 2003 or 2007 or 2011 or 2909). NB: Students are very strongly recommended to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2922 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG 1001 or PLNT (2001 or 2901).	Semester 2

Senior units of study

MICR 3011	Microbes in Infection	6	P At least 6 credit points of MBLG units and MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2807 and 2808). For BScAgr students: PLNT (2001 or 2901) and MICR (2022 or 2922). N MICR3911, MICR3001, MICR3901	Semester 1
MICR 3911	Microbes in Infection (Advanced)	6	P At least 6 credit points of MBLG units and Distinction in MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including in BMED (2807 or 2808) with a Distinction in one of these two.. For BScAgr students: PLNT (2001 or 2901) and MICR (2022 or 2922) including one Distinction. N MICR3011, MICR3001, MICR3901	Semester 1
VIRO 3001	Virology	6	A MICR (2021 or 2921 or 2022 or 2922) P At least 6 credit points of MBLG units and at least 6 credit points in Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI or PLNT units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED2802. For BScAgr students: PLNT (2001 or 2901) andMICR2024. N VIRO3901 NB: Students are very strongly advised to complete VIRO (3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Session 2.	Semester 1
VIRO 3901	Virology (Advanced)	6	A MICR (2021 or 2921 or 2022 or 2922) P At least 6 credit points of MBLG units and at least 6 credit points including one Distinction in Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI or PLNT units. For BMedSc students: 42 credit points of Intermediate BMED units including Distinction in BMED2802. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. NVIRO3001 NB: Students are very strongly advised to complete VIRO (3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Session 2.	Semester 1
MICR 3012	Molecular Biology of Pathogens	6	P At least 6 credit points of MBLG units and MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802, 2807 and 2808). For BScAgr students: PLNT (2001 or 2901) and MICR2024. N MICR3912, MICR3002, MICR3902, MICR3003, MICR3903, MICR3004, MICR3904	Semester 2
MICR 3912	Molecular Biology of Pathogens (Adv)	6	P At least 6 credit points of MBLG units and Distinction in MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 or 2807 or 2808) with a Distinction in one of these three. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. N MICR3012, MICR3002, MICR3902, MICR3003, MICR3903, MICR3004, MICR3904	Semester 2
MICR 3022	Microbial Biotechnology	6	P At least 6 credit points of MBLG units and 6 credit points of Intermediate MICR units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 and 2807). For BScAgr students: PLNT (2001 or 2901) and MICR2024. N MICR3922, MICR3002, MICR3902	Semester 2
MICR 3922	Microbial Biotechnology (Advanced)	6	P At least 6 credit points of MBLG units and Distinction in 6 credit points of Intermediate MICR units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 and 2807) with a Distinction in at least one of these two. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. N MICR3022, MICR3002, MICR3902	Semester 2
VIRO 3002	Medical and Applied Virology	6	A Intermediate microbiology, immunology, molecular biology and genetics. P 6 CP MBLG units and at least 6 CP from Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI units. For BMedSc Students: 42 credit points of Intermediate BMED units including BMED 2807. NB: Students are very strongly recommended to complete VIRO(3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Semester 2.	Semester 2

Molecular Biology and Genetics

Molecular Biology and Genetics units of study are highly recommended to be studied in conjunction with all Life Science subject areas. They are particularly relevant to students intending to major in Biology, Biochemistry or Microbiology.

Junior unit of study

MBLG 1001	Molecular Biology and Genetics (Intro)	6	A 6 credit points of Junior Biology and 6 cp of Junior Chemistry N AGCH 2001 or BCHM (2001 or 2101 or 2901) or MBLG (2101 or 2901 or 2001 or 2111 or 2771 or 2871)	Semester 2

Intermediate units of study

MBLG 2071	Molecular Biology and Genetics A	6	**P** MBLG 1001 and 12 CP of Junior Chemistry. N MBLG (2971 or 2001 or 2101 or 2901 or 2111) or PLNT2001 or AGCH2001 or BCHM (2001 or 2101 or 2901). NB: Students enrolled in the combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) must have completed all Junior units for this course prior to enrolling in this unit.	Semester 1
MBLG 2971	Molecular Biology and Genetics A (Adv)	6	**P** 12 credit points of Junior Chemistry and Distinction in MBLG 1001 N MBLG (2071 or 2001 or 2101 or 2901 or2111)orPLNT2001 orAGCH2001 or BCHM (2001 or 2101 or 2901). NB: Students enrolled in the combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) must have completed all Junior units for this course prior to enrolling in this unit.	Semester 1
MBLG 2072	Molecular Biology and Genetics B	6	AOneofMBLG2071,MBLG2771,MBLG2001,MBLG2871,MBLG2971, MBLG2901 P BIOL (1001 or 1101 or 1901) and MBLG 1001 and 12 credit points of Junior Chemistry NMBLG2972, MBLG2102, MBLG2002, MBLG2902	Semester 2
MBLG 2972	Molecular Biology and Genetics B (Adv)	6	P Distinction in one of MBLG2071, MBLG2771, MBLG2001, MBLG2871, MBLG2971, MBLG2901 N MBLG (2072, 2102, 2002, 2902)	Semester 2

Nanoscience and Technology

A major in Nanoscience and Technology requires 24 credit points of study at Senior level taken from the following:-

- Materials Chemistry (CHEM3112 or CHEM3912)

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
- Membranes, Self Assembley & Surfaces (CHEM3116 or 3916)				
- Senior Physics units containing the Nanoscience lecture module (PHYS3050/3950, 3052/3952, 3056/3956 or 3057/3957)				
- Senior Physics units containing the Condensed Matter Physics lecture module (PHYS 3070/3970, 3074/3974, 3075/3975, 3076/3976, 3077/3977 or 3079/3979)				
- Mechanics of Solids 2 (MECH3361)				
- Materials (MECH3362)				

Neuroscience

For a major in Neuroscience, students are required to complete at least 24 credit points of the Senior elective Units of Study listed below.

Intermediate elective units of study

Intermediate units should be chosen from the following Units of Study: ANAT2010 is strongly recommended. ANAT2010, MBLG2771 (or MBLG 2001/2101), MBLG2871, PCOL2011, PCOL2012, PHSI2005/2905, PHSI2006/2906, PSYC2012, PSYC2013.

Senior elective units of study

At least 24 credit points from the following units of study:

PCOL3012/3912, NEUR3001/3901, NEUR3002/3902, NEUR3003/3903, NEUR3004/3904, PSYC3011, PSYC3013, PSYC3014, PSYC3018

Credit points for senior electives must be selected from all three subject areas, i.e., NEUR and PCOL and PSYC

Pharmacology

For a major in Pharmacology, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.

Intermediate units of study

The completion of MBLG (2001 or 2101 or 2901) is highly recommended.

PCOL 2011	Pharmacology Fundamentals	6	**P** 6 credit points of Junior Chemistry and 6 credit points of Junior Biology N PCOL2001 NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 1
PCOL 2012	Pharmacology: Drugs and People	6	APCOL2011 P 6 credit points of Junior Chemistry and 6 credit points of Junior Biology. N PCOL (2002 and 2003). NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 2

Senior units of study

PCOL 3011	Toxicology	6	**P** PCOL2001 or PCOL2011 and PCOL2012 or 36 credit points from Intermediate BMED units of study. N PCOL3001, PCOL3901, PCOL3911	Semester 1
PCOL 3012	Drug Design and Development	6	**P** PCOL2001 or PCOL2011 and PCOL2012 or 36 credit points from Intermediate BMED units of study. N PCOL3001, PCOL3901, PCOL3912	Semester 1
PCOL 3911	Toxicology (Advanced)	6	**P** Distinction average in PCOL2011 and PCOL2012 or Distinction average in 36 credit points from Intermediate BMED units of study. N PCOL3001, PCOL3901, PCOL3011	Semester 1
PCOL 3912	Drug Design and Development (Adv)	6	**P** Distinction average in PCOL2011 and PCOL2012 or Distinction average in 36 credit points from Intermediate BMED units of study. N PCOL3001, PCOL3901, PCOL3012	Semester 1
PCOL 3021	Drug Therapy	6	**P** PCOL2011 and PCOL2012 or 36 credit points from Intermediate BMED units of study N PCOL3002, PCOL3902, PCOL3921	Semester 2
PCOL 3921	Drug Therapy (Advanced)	6	**P** Distinction average in PCOL2011 and PCOL2012 or in 36 credit points from Intermediate BMED units of study N PCOL3002, PCOL3902, PCOL3021	Semester 2
PCOL 3022	Neuropharmacology	6	**P** PCOL2011, PCOL2012 or 36 credit points from Intermediate BMED units of study N PCOL3002, PCOL3902, PCOL3922	Semester 2
PCOL 3922	Neuropharmacology (Advanced)	6	**P** Distinction average in PCOL2011 and PCOL2012 or in 36 credit points from Intermediate BMED units of study N PCOL3002, PCOL3902, PCOL3022	Semester 2

Physics

For a major in Physics, the minimum requirement is 24 credit points from Senior units of study listed in this subject area, which must include:-

(i) One semester 1 Core unit (PHYS3040, 3940 or 3941)

(ii) One semester 2 Core unit (PHYS3060, 3960 or 3961)

(iii) two other non-over-lapping Options units (chosen from PHYS 305x, 395x, 307x and 397x)

Note that one Senior Computational Science unit (COSC 3011/3911 or 3012/3912) may be included in a Physics major as one of the options.

Junior units of study

PHYS 1001	Physics 1 (Regular)	6	A HSC Physics C Recommended concurrent Units of Study: MATH (1001/1901, 1002/1902) N PHYS (1002 or 1901)	Semester 1
PHYS 1002	Physics 1 (Fundamentals)	6	A No assumed knowledge of Physics C Recommended concurrent Units of Study: MATH (1001/1901, 1002/1902) N PHYS (1001 or 1901)	Semester 1
PHYS 1901	Physics 1A (Advanced)	6	**P** UAI of at least 96, or HSC Physics result in Band 6, or PHYS 1902, or Distinction or better in PHYS (1003 or 1004) or an equivalent unit. C Recommended concurrent Units of Study: MATH (1001/1901,1002/1902). N PHYS (1001 or 1002)	Semester 1
PHYS 1003	Physics 1 (Technological)	6	A HSC Physics or PHYS (1001 or 1002 or 1901) or equivalent. C Recommended concurrent Units of Study: MATH (1003/1903). MATH (1005/1905) would also be useful. N PHYS (1004 or 1902) NB: It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit	Semester 2

Unit	*of*	*Study*	*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
PHYS **1004**	Physics 1 (Environmental & Life Science)		6	A HSC Physics or PHYS (1001 or 1002 or 1901) or equivalent. C Recommended concurrent Units of Study: MATH (1003/1903). MATH (1005/1905) would also be useful. N PHYS (1003 or 1902) NB: It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit	Semester 2
PHYS 1500	Astronomy		6	A No assumed knowledge of Physics.	Semester 2
PHYS 1902	Physics IB (Advanced)		6	P UAI of at least 96, or HSC Physics result in Band 6, or PHYS 1901, or Distinction or better in PHYS (1001 or 1002) or an equivalent unit. C Recommended concurrent unit of study: MATH (1003/1903). MATH 1005/1905 would also be useful. N PHYS (1003 or 1004) NB: It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit	Semester 2

Intermediate units of study

PHYS **2011**	Physics 2A		6	A MATH (1001/1901 and 1002/1902 and 1003/1903). MATH (1005/1905) would also be useful P 12 credit points of Junior Physics (excluding PHYS 1500 and PHYS 1600) N PHYS (2001 or 2901 or 2911 or 2101 or 2103 or 2213 or 2203)	Semester 1
PHYS **2911**	Physics 2A (Advanced)		6	A MATH (1901/1001 and 1902/1002 and 1903/1003). MATH (1905/1005) would also be useful P Credit or better in PHYS (1901 or 1001 or 1002) and Credit or better in PHYS (1902 or 1003 or 1004). N PHYS (2901 or 2001 or 2011 or 2101 or 2103 or 2213 or 2203)	Semester 1
PHYS 2012	Physics 2B		6	A MATH (1001/1901 and 1002/1902 and 1003/1903). MATH (1005/1905) would also be useful P PHYS (1003 or 1004 or 1902) and PHYS (1001 or 1002 or 1901 or 2001 or 2901 or 2011 or 2911) N PHYS (2102 or 2104 or 2902 or 2002 or 2912 or 2213 or 2203)	Semester 2
PHYS 2013	Astrophysics and Relativity		6	A MATH (1001/1901 and 1002/1902 and 1003/1903). MATH 1005/1905 would also be useful P PHYS (1003 or 1004 or 1902) and PHYS (1001 or 1002 or 1901 or 2011 or 2911) C PHYS (2012 or 2912) N PHYS (2001 or 2901 or 2913 or 2101 or 2103)	Semester 2
PHYS 2912	Physics 2B (Advanced)		6	A MATH (1001/1901 and 1002/1902 and 1003/1903). MATH 1005/1905 would also be useful P Credit or better in PHYS (1003 or 1004 or 1902) and Credit or better in PHYS (1001 or 1002 or 1901 or 2001 or 2901 or 2011 or 2911). N PHYS (2102 or 2104 or 2902 or 2002 or 2012 or 2213 or 2203)	Semester 2
PHYS 2913	Astrophysics and Relativity (Advanced)		6	A MATH (1001/1901 and 1002/1902 and 1003/1903). MATH 1005/1905 would also be useful. P Credit or better in PHYS (1003 or 1004 or 1902) and Credit or better in PHYS (1001 or 1002 or 1901 or 2011 or 2911) C PHYS (2912 or 2012). N PHYS (2001 or 2901 or 2013 or 2101 or 2103)	Semester 2

Senior units of study

PHYS 3040	Electromagnetism & Physics Lab		6	**P** PHYS(2011 or 2911 or 2001 or 2901), PHYS(2012 or 2912 or 2002 or 2902), MATH(2061 or 2961 or 2067) NPHYS3940, PHYS3941, PHYS3011, PHYS3014, PHYS3016, PHYS3017, PHYS3911, PHYS3914, PHYS3916, PHYS3917	Semester 1
PHYS 3050	Nanoscience/Optics & Physics Lab		6	A Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) N PHYS3950, PHYS3052, PHYS3053, PHYS3056, PHYS3952, PHYS3953, PHYS3956, PHYS3012, PHYS3021, PHYS3912, PHYS3921, PHYS3057, PHYS3957, PHYS3058, PHYS3958	Semester 1
PHYS **3051**	Thermodynamics/Biol. Physics & Lab		6	PPHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) NPHYS3951,PHYS3052, PHYS3053, PHYS3056, PHYS3952, PHYS3953, PHYS3956, PHYS3013, PHYS3023, PHYS3913, PHYS3923, PHYS3057, PHYS3957, PHYS3058, PHYS3958	Semester 1
PHYS 3052	Nanoscience/Thermodynamics & Lab		6	PPHYS (2011 or2911 or2001 or2901); PHYS (2012 or2912 or2002 or2902) NPHYS3952,PHYS3050, PHYS3051, PHYS3053, PHYS3056, PHYS3950, PHYS3951, PHYS3953, PHYS3956, PHYS3013, PHYS3021, PHYS3913, PHYS3921, PHYS3057, PHYS3957, PHYS3058, PHYS3958	Semester 1
PHYS **3053**	Thermodynamics/Optics & Physics Lab		6	A Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) N PHYS3953, PHYS3050, PHYS3051, PHYS3052, PHYS3056, PHYS3950, PHYS3951, PHYS3952, PHYS3956, PHYS3012, PHYS3013, PHYS3912, PHYS3913, PHYS3057, PHYS3957, PHYS3058, PHYS3958	Semester 1
PHYS **3056**	Nanoscience/Optics/Thermodynamics		6	A Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) N PHYS3956, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3057, PHYS3058, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3957, PHYS3958, PHYS3012, PHYS3013, PHYS3021, PHYS3912, PHYS3913, PHYS3921	Semester 1
PHYS **3057**	Nanoscience/Thermodynamic/Biol.Phys		6	PPHYS (2011 or2911 or2001 or2901); PHYS (2012 or2912 or2002 or2902) NPHYS3957,PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3056, PHYS3058, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3956, PHYS3958, PHYS3013, PHYS3021, PHYS3023, PHYS3913, PHYS3921, PHYS3923	Semester 1
PHYS **3058**	Optics/Thermodynamics/Biol. Physics		6	A Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902) N PHYS3958, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3056, PHYS3057, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3956, PHYS3957, PHYS3012, PHYS3013, PHYS3023, PHYS3912, PHYS3913, PHYS3923	Semester 1
PHYS **3940**	Electromagnetism & Physics Lab (Adv)		6	P PHYS (2011 or 2911 or 2001 or 2901) with a grade of at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with a grade of at least Credit; MATH (2061 or 2961 or 2067) N PHYS3040, PHYS3941, PHYS3011, PHYS3014, PHYS3016, PHYS3017, PHYS3911, PHYS3914, PHYS3916, PHYS3917	Semester 1
PHYS 3941	Electromagnetism & Special Project (Adv)		6	P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; MATH (2061 or 2961 or 2067) N PHYS3040, PHYS3940, PHYS3961, PHYS3011, PHYS3911, PHYS3918, PHYS3928 NB: Approval for this unit must be obtained from the School of Physics Senior Coordinator.Department permission required for enrolment.	Semester 1
PHYS 3950	Nanoscience/Optics & Physics Lab (Adv)		6	A Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit N PHYS3050, PHYS3052, PHYS3053, PHYS3056, PHYS3952, PHYS3953, PHYS3956, PHYS3012, PHYS3021, PHYS3912, PHYS3921, PHYS3057, PHYS3957, PHYS3058, PHYS3958	Semester 1
PHYS **3951**	Thermodynamics/Biol. Physics & Lab (Adv)		6	P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit N PHYS3051, PHYS3052, PHYS3053, PHYS3056, PHYS3952, PHYS3953, PHYS3956, PHYS3013, PHYS3023, PHYS3913, PHYS3923, PHYS3057, PHYS3957, PHYS3058, PHYS3958	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
PHYS 3952	Nanoscience/Thermodynamics & Lab (Adv)	6	P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit N PHYS3052, PHYS3050, PHYS3051, PHYS3053, PHYS3056, PHYS3950, PHYS3951, PHYS3953, PHYS3956, PHYS3013, PHYS3021, PHYS3913, PHYS3921, PHYS3057, PHYS3957, PHYS3058, PHYS3958	Semester 1
PHYS 3953	Thermodynamics/Optics & Physics Lab(Adv)	6	A Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit N PHYS3053, PHYS3050, PHYS3051, PHYS3052, PHYS3056, PHYS3950, PHYS3951, PHYS3952, PHYS3956, PHYS3012, PHYS3013, PHYS3912, PHYS3913, PHYS3057, PHYS3957, PHYS3058, PHYS3958	Semester 1
PHYS 3956	Nanoscience/Optics/Thermodynamics (Adv)	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit N PHYS3056, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3057, PHYS3058, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3957, PHYS3958, PHYS3012, PHYS3013, PHYS3021, PHYS3912, PHYS3913, PHYS3921	Semester 1
PHYS 3957	Nanoscience/Thermodynam-ic/Biol.Phys(Adv)	6	**P** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit N PHYS3057, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3056, PHYS3058, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3956, PHYS3958, PHYS3013, PHYS3021, PHYS3023, PHYS3913, PHYS3921, PHYS3923	Semester 1
PHYS 3958	Optics/Thermodynamics/Biol.Physics (Adv)	6	A Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit N PHYS3058, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3056, PHYS3057, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3956, PHYS3957, PHYS3012, PHYS3013, PHYS3023, PHYS3912, PHYS3913, PHYS3923	Semester 1
PHYS 3060	Quantum Mechanics & Physics Lab	6	**P** PHYS 2011 or 2911 or 2001 or 2901; PHYS 2012 or 2912 or 2002 or 2902; MATH 2061 or 2961 or 2067 NPHYS 3960, 3961, 3011, 3024, 3026, 3027, 3911, 3924, 3926, 3927	Semester 2
PHYS 3070	Plasma Physics/Cond. Matter & Lab	6	**A** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or2912 or 2002 or 2902) NPHYS3970,PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3021, PHYS3912, PHYS3921	Semester 2
PHYS 3071	High Energy/Astrophysics & Lab	6	P PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) NPHYS3971, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3022, PHYS3922	Semester 2
PHYS 3072	Plasma Physics/Astrophysics & Lab	6	A Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) N PHYS3972, PHYS3070, PHYS3071, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3021, PHYS3022, PHYS3921, PHYS3922	Semester 2
PHYS 3073	Plasma/High Energy Physics & Lab	6	**A** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) N PHYS3973, PHYS3070, PHYS3071, PHYS3072, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3021, PHYS3022, PHYS3921, PHYS3922	Semester 2
PHYS 3074	High Energy/Cond. Matter Physics & Lab	6	A Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) P PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) NPHYS3974, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3022, PHYS3912, PHYS3922	Semester 2
PHYS 3075	Cond. Matter/Astrophysics & Lab	6	A Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) P PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) N PHYS3975, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3022, PHYS3912, PHYS3922	Semester 2
PHYS 3076	Plasma/Cond.Matter/High Energy Physics	6	A Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or2901) NPHYS3976, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3021, PHYS3022, PHYS3912, PHYS3921,PHYS3922	Semester 2
PHYS 3077	Plasma/Cond. Matter/Astrophysics	6	A Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2012 or2912or2002or2902); PHYS (2013 or 2913 or 2001 or 2901) NPHYS3977,PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3978, PHYS3979, PHYS3012, PHYS3021, PHYS3022, PHYS3912, 3921, PHYS3922	Semester 2
PHYS 3078	Plasma/High Energy/Astrophysics	6	A Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) N PHYS3978, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3979, PHYS3021, PHYS3022, PHYS3921, PHYS3922	Semester 2
PHYS 3079	Cond. Matter/High Energy/Astrophysics	6	A Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) P PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901) NPHYS3979, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3012, PHYS3022, PHYS3912, PHYS3922	Semester 2

Unit	of Study	CP	A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition	Session
PHYS 3960	Quantum Mechanics & Physics Lab (Adv)	6	P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; MATH (2061 or 2961 or 2067) N PHYS3060, PHYS3961, PHYS3011, PHYS3024, PHYS3026, PHYS3027, PHYS3911, PHYS3924, PHYS3926, PHYS3927	Semester 2
PHYS 3961	Quantum Mechanics & Special Project(Adv)	6	P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; MATH (2061 or 2961 or 2067) N PHYS3060, PHYS3960, PHYS3941, PHYS3011, PHYS3911, PHYS3918, PHYS3928 NB: Approval for this unit must be obtained from the School of Physics Senior CoordinatorDepartment permission required for enrolment.	Semester 2
PHYS 3970	Plasma Physics/Cond. Matter & Lab (Adv)	6	A Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit N PHYS3070, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3021, PHYS3912, PHYS3921	Semester 2
PHYS 3971	High Energy/Astrophysics & Lab (Adv)	6	P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit N PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3022, PHYS3922	Semester 2
PHYS 3972	Plasma Physics/Astrophysics & Lab (Adv)	6	A Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit N PHYS3072, PHYS3070, PHYS3071, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3021, PHYS3022, PHYS3921, PHYS3922	Semester 2
PHYS 3973	Plasma/High Energy Physics & Lab (Adv)	6	A Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit NPHYS3073,PHYS3070,PHYS3071,PHYS3072, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3021, PHYS3022, PHYS3921, PHYS3922	Semester 2
PHYS 3974	High Energy/Cond. Matter Phys.& Lab (Adv)	6	A Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit N PHYS3074, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3022, PHYS3912, PHYS3922	Semester 2
PHYS 3975	Cond. Matter/Astrophysics & Lab (Adv)	6	A Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) P PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit N PHYS3075, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3022, PHYS3912, PHYS3922	Semester 2
PHYS 3976	Plasma/Cond.Matter/High Energy Phys(Adv)	6	A Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit N PHYS3076, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3021, PHYS3022, PHYS3912, PHYS3921, PHYS3922	Semester 2
PHYS 3977	Plasma/Cond. Matter/Astrophysics (Adv)	6	A Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit NPHYS3077, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3978, PHYS3979, PHYS3012, PHYS3021, PHYS3022, PHYS3912, PHYS3921,PHYS3922	Semester 2
PHYS 3978	Plasma/High Energy/Astrophysics (Adv)	6	A Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067) P PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit NPHYS3078,PHYS3070,PHYS3071,PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3979, PHYS3021, PHYS3022, PHYS3921, PHYS3922	Semester 2
PHYS 3979	Cond. Matter/High Energy/Astrophys (Adv)	6	A Quantum Mechanics at Senior Physics level; MATH (2061 or 2961) P PHYS (2011 or 2911 or 2001 or 2901) with at least credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit N PHYS3079, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3012, PHYS3022, PHYS3912, PHYS3922	Semester 2

Physiology

For a major in Physiology, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.

Intermediate units of study

PHSI 2005	Integrated Physiology A	6	P 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study N PHSI (2905 or 2001 or 2101 or 2901) NB: The completion of 6 credit points of MBLG units of study is highly recommended for progression to Senior Physiology. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites.	Semester 1

Unit of Study		CP	A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition	Session
PHSI 2905	Integrated Physiology A (Advanced)	6	P 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study N PHSI (2005 or 2901 or 2001 or 2101). NB: Permission from the coordinators is required for entry into this course. It is available only to selected students who have achieved a WAM of 65 (Credit average) or higher in their Junior units of study. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites.The completion of 6 credit points of MBLG units of study is highly recommended for progression to Senior PhysiologyDepartment permission required for enrolment.	Semester 1
PHSI 2006	Integrated Physiology B	6	P 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study N PHSI (2906 or 2002 or 2102 or 2902). NB: The completion of Molecular Biology and Genetics A is highly recommended for progression to Senior Physiology. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites.	Semester 2
PHSI 2906	Integrated Physiology B (Advanced)	6	P 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study N PHSI (2006 or 2902 or 2002 or 2102). NB: Permission from the coordinators is required for entry into this course. It is available only to selected students who have achieved a WAM of 65 (Credit average) or higher in their Junior units of study. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisite.The completion of Molecular Biology and Genetics A is highly recommended for progression to Senior Physiology.Department permission required for enrolment.	Semester 2

Senior units of study

PHSI 3005	Human Cellular Physiology: Theory	6	A 6 credit points of MBLG P Except for BMedSc students: PHSI(2005 or 2905) and PHS(I2006 or 2906)For BMedSc: BMED (2801 and 2802). N PHSI3905, PHSI3004, PHSI3904	Semester 1
PHSI 3905	Human Cellular Physiology (Adv): Theory	6	A 6 credit points of MBLG P Credit average in PHSI(2005 or 2905) and PHS(2006 or 2906) or in BMED (2801 and 2802). Students enroling in this unit should have a SciWAM of at least 68. N PHSI3005, PHSI3004, PHSI3904 NB: It is highly recommended that this unit of study be taken in combination with PHSI3906Department permission required for enrolment.	Semester 1
PHSI 3006	Human Cellular Physiology: Research	6	P Except for BMedSc students: PHSI (2005 or 2905) and PHSI(2006 or 2906)For BMedSc: BMED (2801 and 2802). N PHSI3906, PHSI3004, PHSI3904 NB: It is strongly recommended that students take PHSI3006 only in combination with PHSI3005. Students should contact the Physiology office to register for PBL and practical classes.	Semester 1
PHSI 3906	Human Cellular Physiology (Ad): Research	6	A 6 credit points of MBLG P Credit average in PHSI (2005 or 2905) and PHSI(2006 or 2906) or in BMED (2801 and 2802). Students enroling in this unit should have a SciWAM of at least 68. N PHSI3006, PHSI3004, PHSI3904 NB: It is highly recommended that this unit of study be taken only in combination with PHSI3905Department permission required for enrolment.	Semester 1
NEUR 3001	Neuroscience: Special Senses	6	A It is strongly recommended that students also take unit NEUR3002. PHSI2005 and ANAT2010 are assumed knowledge. P For BMedSc students: BMED(2801 or 2503) and BMED(2806 or 2505)For other students: (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. NPHSI3001,NEUR3901	Semester 1
NEUR 3901	Neuroscience: Special Senses (Advanced)	6	A PHSI2005 and ANAT2010 P For BMedSc students: Credit average in BMED(2801 or 2503) and BMED(2806 or 2505)For other students: Credit average in (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. N NEUR3001 and PHSI3001 and PHSI3901 NB: Permission from the coordinators is required for entry into this course. It is strongly recommended that students also take unit NEUR3002 or NEUR3902.	Semester 1
NEUR 3002	Neuroscience: Motor Systems & Behaviour	6	A It is strongly recommended that students also take unit NEUR3001. ANAT2010 and PHSI2005 is assumed knowledge. P For BMedSc students: BMED(2801 or 2503) and BMED(2806 or 2505)For other students: (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. NPHSI300LNEUR3902	Semester 1
NEUR 3902	Neuroscience: Motor Systems & Behav. Adv	6	A ANAT2010 and PHSI2005 is assumed knowledge. P For BMedSc students: Credit average in BMED(2801 or 2503) and BMED(2806 or 2505)For other students: Credit average in (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. N NEUR3002 and PHSI3001 NB: Permission from the coordinators is required for entry into this course. It is strongly recommended that students also take unit NEUR3001 or NEUR3901.	Semester 1
PHSI 3007	Heart and Circulation: Normal Function	6	A 6 credit points of MBLG P Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of StudyFor BMedSc: BMED (2801 and 2803). N PHSI3907, PHSI3003, PHSI3903 NB: It is recommended that students take PHSI3007 ONLY in combination with PHSI3008.	Semester 2
PHSI 3907	Heart & Circulation: Normal Function Adv	6	A 6 credit points of MBLG P Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of StudyFor BMedSc: BMED (2801 and 2803). N PHSI3007, PHSI3003, PHSI3903 NB: Available to selected students who have achieved an average of at least 75 in their prerequisite units of study. It is highly recommended that this unit of study be taken in combination with PHSI3908.	Semester 2
PHSI 3008	Heart and Circulation: Dysfunction	6	A 6 credit points of MBLG P Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of StudyFor BMedSc: BMED (2801 and 2803) N PHSI3908, PHSI3003, PHSI3903 NB: It is strongly recommended that students take PHSI3008 ONLY in combination with PHSI3007	Semester 2
PHSI 3908	Heart & Circulation: Dysfunction Adv	6	A 6 credit points of MBLG P Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of StudyFor BMedSc: BMED (2801 and 2803). N PHSI3008, PHSI3003, PHSI3903 NB: Available to selected students who have achieved an average of at least 75 in their prerequisite units of study. It is highly recommended that this unit of study be taken ONLY in combination with PHSI3907 or PHSI 3007.	Semester 2
NEUR 3003	Cellular and Developmental Neuroscience	6	A Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. P For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics N NEUR3903, PHSI3002, PHSI3902 NB: Enrollment in NEUR3004/3904 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.	Semester 2

Unit of Study		CP	A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition	Session
NEUR **3903**	Cellular & Developmental Neurosci. (Adv)	6	A Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. P For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. Plus, students must have a CREDIT (or better) inNEUR3001/3901 and NEUR3002/3902. N NEUR3003, PHSI3002, PHSI3902 NB: Enrollment in NEUR3004/3904 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other. Students must receive permission from the coordinators for enrollment.Department permission required for enrolment.	Semester 2
NEUR **3004**	Integrative Neuroscience	6	A Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. P For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. N NEUR3904, PHSI3002, PHSI3902 NB: Enrollment in NEUR3003/3903 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.	Semester 2
NEUR 3904	Integrative Neuroscience (Advanced)	6	A Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. P For BMedSCI: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. Plus, students must have a CREDIT (or better) inNEUR3001/3901 and NEUR3002/3902. N NEUR3004, PHSI3002, PHSI3902 NB: Enrollment in NEUR3003/3903 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other. Students must receive permission from the coordinators for enrollment.Department permission required for enrolment.	Semester 2

Plant Science

For a major in Plant Science, the minimum requirement is 24 credit points from Senior units of study listed in this subject area, including a minimum of 12 credit points of senior PLNT units.

Intermediate units of study

PLNT **2001**	Plant Biochemistry and Molecular Biology	6	**P** 12 credit points of Junior Chemistry and 12 credit points of Junior Biology (or with the Dean's permission BIOL 1201 and BIOL 1202) N PLNT2901, AGCH2001.	Semester 1
PLNT **2901**	Plant Biochem & Molecular Biology (Adv)	6	**P** A Distinction average in 12 credit points of Junior Chemistry and 12 credit points of Junior Biology (or with the Dean's permission BIOL 1201 and BIOL 1202) N PLNT2001, AGCH2001	Semester 1
PLNT **2002**	Aust Flora: Ecology and Conservation	6	**P** One of BIOL 1001, BIOL 1101, BIOL 1901; One of BIOL 1002, BIOL 1003, BIOL 1902, BIOL 1903, LWSC1002. (With the Dean's permission BIOL 1201 and BIOL 1202 may be substituted for the above.) N PLNT2902, BIOL2004 or BIOL2904.	Semester 1
PLNT 2902	Aust Flora: Ecology & Conservation (Adv)	6	P Distinction average in (one of BIOL 1001, BIOL1101, BIOL 1901) and (one of BIOL 1002, BIOL 1003, BIOL 1902, BIOL 1903, LWSC1002) (or with the Dean's permission BIOL 1201 and BIOL 1202) N PLNT2002, BIOL2004, BIOL2904.	Semester 1
PLNT **2003**	Plant Form and Function	6	A The content of BIOL (1002 or 1902) is assumed knowledge and students entering from BIOL (1003 or 1903) will need to do some preparatory reading. P 12 credit points of Junior Biology (or with the Dean's permission), BIOL 1201 and BIOL 1202 or BIOL 1001 and ENVI1002 N PLNT2903, BIOL2003, BIOL2903, CROP2001.	Semester 2
PLNT 2903	Plant Form and Function (Advanced)	6	A The content of BIOL (1002 or 1902) is assumed knowledge and students entering from BIOL (1003 or 1903) will need to do some preparatory reading. P Distinction average in 12 credit points of Junior Biology or BIOL 1001 and ENVI 1002 (or with the Dean's permission, BIOL 1201 and BIOL 1202) N PLNT2003, BIOL2003, BIOL2903, CROP2001	Semester 2

Senior units of study

PLNT **3001**	Plant, Cell and Environment	6	**P** 12 credit points of Intermediate Biology, Plant Science, Molecular Biology and Genetics or equivalent. N PLNT 3901	Semester 2
PLNT 3901	Plant, Cell and Environment (Advanced)	6	P 12 credit points of Intermediate Biology, Plant Science, Molecular Biology and Genetics or equivalent. N PLNT3001 NB: Entry is restricted and is based on a combination of a high WAM and student motivation. Department permission required for enrolment.	Semester 2
PLNT **3002**	Plant Growth and Development	6	P 12 credit points of intermediate PLNT, BIOL, AGCH or CROP units of study including at least one of PLNT 2001, PLNT 2901, PLNT 2003, PLNT 2903, BIOL 2016, BIOL 2916, BIOL 2003, BIOL 2903, BIOL 2006, BIOL 2906, CROP 2001, AGCH 2002 or equivalent. N PLNT 3902, BIOL 3021, BIOL 3931.	Semester 2
PLNT 3902	Plant Growth and Development (Advanced)	6	P Distinction average in 12 credit points of intermediate PLNT, BIOL, AGCH or CROP units of study including at least one of PLNT 2001, PLNT 2901, PLNT 2003, PLNT 2903, BIOL 2016, BIOL 2916, BIOL 2003, BIOL 2903, BIOL 2006, BIOL 2906, CROP 2001, AGCH 2002 or equivalent. These requirements may be varied and students with lower averages should consult the unit coordinator. N PLNT 3002, BIOL 3021, BIOL 3931.	Semester 2
PLNT **3003**	Systematics and Evolution of Plants	6	A BIOL(1001 or 1101 or 1901 or 1002 or 1902 or 1904) P PLNT (2002 or 2902) or equivalent N BIOL3015, BIOL3915, PLNT3903	Semester 1
PLNT **3903**	Systematics and Evolution of Plants Adv	6	A BIOL 1001 or BIOL 1101 or BIOL 1901 or BIOL 1002 or BIOL 1902 or BIOL 1904 P Distinction in PLNT 2002 or PLNT 2902 (or equivalent). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N BIOL3015/3915 or PLNT3003	Semester 1
BIOL 3009	Terrestial Field Ecology	6	A Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly recommended. P 12 credit points of intermediate level Biology. N BIOL (3909, 3041, 3941, 3042, 3942, 3024, 3924). NB: Dates: Sunday 16 July to Friday 21 July 2006	S2 Intensive
BIOL 3909	Terrestial Field Ecology (Advanced)	6	A Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly recommended. P Distinction average in 12 credit points of intermediate level Biology. N BIOL (3009, 3041, 3941, 3042, 3942, 3024, 3924). NB: Dates: Sunday 16 July to Friday 21 July 2006	S2 Intensive

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
BIOL 3017	Fungal Biology	6	**P** 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. N BIOL3917 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester la
BIOL 3917	Fungal Biology (Advanced)	6	P Distinction average in 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. N BIOL3 017 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester la
PPAT 3003	Plant Disease	6	P Two of PLNT2001, PLNT 2901, PLNT 2002, PLNT 2902, PLNT 2003, PLNT 2903, MICR 2024 or MICR 2026.	Semester 1
HORT 3005	Production Horticulture	6	A HORT 1001, HORT 1002 and HORT 2002. P Two of PLNT 2001, PLNT 2901, PLNT 2002, PLNT 2902, PLNT 2003, PLNT 2903.	Semester 1
HORT 3004	Postharvest Biology and Technology	6	A HORT 1001, HORT 1002 and HORT 2002. P Two of PLNT 2001, PLNT 2901, PLNT 2002, PLNT 2902, PLNT 2003, PLNT 2903.	Semester 1
AGRO 3002	Agronomy 3	6	A CROP 1001 or HORT 1001 or LWSC 1001 P PLNT 2003 or PLNT 2903	Semester 1

Psychology

For a major in Psychology, the minimum requirement is 48 credit points across Intermediate and Senior Psychology* units of study including PSYC (2111 or 2011), PSYC (2112 or 2012), PSYC (2113 or 2013) and PSYC (2114 or 2014). No other Intermediate Psychology units can be counted towards the major.You must complete at least 24 (30 for BPsych) credit points of Senior Psychology for a major.The senior units must include at least one of PSYC3011, 3012, 3013 and 3014. Students who want to be eligible for entry to the Honours or GDS 4th year programs must also include PSYC3010.

*Note: HPSC3202 History & Philosophy of Psycholog)*r & Psychiatry is available for Senior Psychology students and will count towards a major in Psychology. Successful completion of this unit of study is essential for students intending to take the Theoretical Thesis option in Psychology HOnours.

Junior units of study

PSYC 1001	Psychology 1001	6		Semester 1, Summer
PSYC 1002	Psychology 1002	6		Semester 2, Summer

Intermediate units of study

PSYC 2011	Brain and Behaviour	6	P PSYC (1001 and 1002). N PSYC2111	Semester 1
PSYC 2012	Statistics & Research Methods for Psych	6	A Recommended: HSC Mathematics, any level P PSYC (1001 and 1002). N PSYC2112	Semester 1
PSYC 2013	Cognitive and Social Psychology	6	P PSYC (1001 and 1002). N PSYC2113	Semester 2
PSYC 2014	Personality and Differential Psychology	6	P PSYC (1001 and 1002) N PSYC2114	Semester 2

Senior units of study

PSYC 3011	Learning and Behaviour	6	A PSYC (2012 or 2112) P PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114). N PSYC3209	Semester 1
PSYC 3012	Cognition, Language and Thought	6	A PSYC (2012 or 2112) P PSYC (2013 or 2113) and at least one other Intermediate Psychology unit from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2014 or 2114). N PSYC3205	Semester 1
PSYC 3015	Intelligence and Human Reasoning	6	A PSYC(2012 or 2112). P PSYC(2014 or 2114) and PSYC(2013 or 2113).	Semester 1
PSYC 3016	Developmental Psychology	6	P PSYC (2013 or 2113) and at least one other Intermediate Psychology unit from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2014 or 2114). N PSYC 3206	Semester 1
PSYC 3017	Social Psychology	6	A PSYC (2012 or 2112). P PSYC (2013 or 2113) and at least one other Intermediate Psychology Unit of Study from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2014 or 2114). N PSYC3212	Semester 1
HPSC 3023	Psychology & Psychiatry: History & Phil	6	A Basic knowledge about the history of modern science as taught in HPSC2100 AND the principles of philosophy of science as taught in HPSC2101 AND knowledge of the various sub-disciplines within Psychology. P (at least 8 credit points of intermediate HPSC Units of study) OR (a CR or above in one HPSC intermediate Unit of Study) OR (12 intermediate credit points in psychology). N PSYC3202	Semester 1
PSYC 3010	Advanced Statistics for Psychology	6	P PSYC (2012 or 2112) plus at least one other Intermediate Psychology Unit of Study from PSYC (2011 or 2111), PSYC (2013 or 2113), PSYC (2014 or 2114). N PSYC3201	Semester 2
PSYC 3013	Perceptual Systems	6	A PSYC2012 P PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114) or ANAT2010 N PSYC3210	Semester 2
PSYC 3014	Behavioural and Cognitive Neuroscience	6	A PSYC (2113 or 2013) P (PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114)) OR (ANAT2010 plus PCOL2011) NPSYC3204,PSYC3215	Semester 2
PSYC 3018	Abnormal Psychology	6	A PSYC2012 P PSYC (2014 or 2114) and at least one other Intermediate Psychology unit of study from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2013 or 2113). N PSYC3203	Semester 2
PSYC 3019	Communication and Counselling	6	A PSYC (2012 or 2112). P PSYC2013 and one other Intermediate Psychology unit of study from PSYC (2011 or 2111), PSYC (2012 or 2112) and PSYC (2014 or 2114). N PSYC3214	Semester 2

Soil Science

For a major in Soil Science, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
Intermediate units of study				
SOIL 2003	Soil Properties and Processes	6		Semester 1
SOIL 2004	The Soil Resource	6	P GEOL1001 or GEOL1002/1902 or ENVI1002 or GEOG1001	Semester 2
Senior units of study				
SOIL 3005	Field and Laboratory Soil Physics	6	P SOIL 2004 NB: Department permission required for enrolment.	Semester 1
SOIL 3006	Field and Laboratory Pedology	6	P SOIL 2004 NB: Department permission required for enrolment.	Semester 1
SOIL 3007	Environmental Soil Chemistry	6	P SOIL 2004 NB: Department permission required for enrolment.	Semester 2
SOIL 3008	Rural Spatial Information Systems	6		Semester 2
Statistics				
For a major in Statistics, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.				
Intermediate units of study				
STAT 2011	Statistical Models	6	P MATH (1001 or 1901 or 1906 or 1011) and [MATH (1005 or 1905 or 1015) or STAT1021] N STAT (2901 or 2001 or 2911)	Semester 1
STAT 2012	Statistical Tests	6	A STAT (2011 or 2002) P MATH (1005 or 1905 or 1015) N STAT (2004 or 2912)	Semester 2
STAT 2911	Probability and Statistical Models (Adv)	6	P MATH (1903 or 1907 or Credit in 1003) and MATH (1905 or Credit in 1005) N STAT (2001 or 2011 or 2901)	Semester 1
STAT 2912	Statistical Tests (Advanced)	6	A STAT (2911 or 2901) P MATH 1905 or Credit in MATH 1005 N STAT (2004 or 2012)	Semester 2
Senior units of study				
STAT 3011	Stochastic Processes and Time Series	6	P STAT (2011 or 2911 or 2001 or 2901) and MATH (1003 or 1903 or 1907). N STAT3911, STAT3003, STAT3903, STAT3005, STAT3905.	Semester 1
STAT 3012	Applied Linear Methods	6	P STAT(2012 or 2912 or 2004) and MATH(1002 or 1902). N STAT3912, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
STAT 3013	Statistical Inference	6	P STAT(2012 or 2912 or 2003 or 2903). N STAT3913, STAT3001, STAT3901.	Semester 2
STAT 3014	Applied Statistics	6	A STAT(3012 or 3912). P STAT(2012 or 2912 or 2004). N STAT3914, STAT3002, STAT3902, STAT3006	Semester 2
STAT 3911	Stochastic Processes and Time Series Adv	6	P (STAT2911 or credit in STAT2011) and MATH(1003 or 1903 or 1907). N STAT3011, STAT3003, STAT3903, STAT3005, STAT3905.	Semester 1
STAT 3912	Applied Linear Methods Advanced	6	P (STAT2912 or Credit in STAT2004 or Credit in STAT2012) and MATH(2061 or 2961 or 1902). N STAT3012, STAT3002, STAT3902, STAT3004, STAT3904.	Semester 1
STAT 3913	Statistical Inference Advanced	6	P STAT(2912 or 2903). N STAT3013, STAT3001, STAT3901.	Semester 2
STAT 3914	Applied Statistics Advanced	6	A STAT3912. P STAT2912 or credit or better in (STAT2004 or STAT2012). N STAT3014, STAT3002, STAT3902, STAT3006, STAT3907.	Semester 2

Study in other faculties

A total of 48 credit points of units of study from non-Science discipline areas may be counted towards the BSc degree. Students should consult the Handbooks from other faculties to determine any prerequisites, corequisites or other requirements relating to enrolment in units of study offered by departments in these faculties. Students may not enrol in Concepts and Issues in Physical Science (PHYS1600) or General Statistical Methods 1 (STAT 1021) or General Statistical Methods 2 (STAT 1022) or Econometrics or any other unit of study deemed to be mutually exclusive with units of study listed in this Table. Students enrolled in the combined BSc/BCom program may enrol in Econometrics 1A (ECMT 1010).

Table IA: Bachelor of Science (Bioinformatics)

Unit of Study				*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
A. Junior units of study						
Candidates are required to enrol in and complete:						
(i) 12 credit points from Junior units of study in the Science Subject Area of Mathematics (MATH 1011, 1013, 1014 and 1015 or equivalents);						
(ii) 6 credit points from Junior units of study in the Science Subject Areas of Biology (BIOL 1001/1101/1901);						
(iii) From 2005, 6 credit points from Junior units of study in the Science Subject Area of Molecular Biology and Genetics (MBLG 1001);						
(iv) 12 credit points from Junior units of study in the Science Subject Area of Chemistry; and						
(v) 12 credit points from Junior units of study in the Science Subject Area of Computer Science (SOFT 1001/1901 and SOFT 1002/1902).						
B. Intermediate units of study						
Candidates are required to enrol in and complete:						
(i) INFO (2110 or 2810) and SOFT (2130 or 2830);						
(ii) MBLG (2071 or 2971) and MBLG (2072 or 2972);						
(iii) at least 12 credit points from other Intermediate units of study in the Science Subject Areas of Biochemistry, Biology, Microbiology or Pharmacology and/or Plant Science (may include further Junior units of study in Biology); and						
(iv) a further 12 credit points of additional units of study at the Intermediate level chosen from the Science Subject Areas of Computer Science, Information Systems, Computational Science, Statistics, or from the following Mathematics units of study: MATH (2061 or 2961), MATH (2063 or 2963), MATH (2069 or 2969), MATH (2070 or 2970).						
C. Senior units of study						
Candidates are required to enrol in and complete:						
(i) BINF 3001 Bioinformatics Project and at least 6 credit points of Senior units of study in the Science Subject Area of Computer Science;						
(ii) 24 credit points of Senior units of study in the Science Subject Areas of Biology, Biochemistry, Microbiology, Pharmacology and/or Plant Science; and						
(iii) a further 12 credit points of additional units of study at the Senior level chosen from the Science Subject Areas of Computer Science, Information Systems, Computational Science, Statistics or from the following Mathematics and Physics units of study: MATH 3067, MATH 3076/3976, MATH 3063/3963, COSC (3011 or 3911), COSC (3012 or 3912).						
BINF 3101	Bioinformatics	Proj	ect	6	A 12 credit points from Junior units of study in Software Development (SOFT) and/or Computational Science (COSC) P SOFT (2130 or 2830 or 2004 or 2904) and 12 credit points from Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and Genetics and/or Pharmacology N COMP 3206, BINF3001	Semester 2

Table IB: Bachelor of Science (Environmental)

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
A. Junior units of study				
Candidates are required to enrol in and complete:				
(i) ENVI 1002 and GEOL 1002;				
(ii) 12 credit points of Junior units of study from the Science Subject Area of Biology;				
(iii) 12 credit points of Junior units of study from the Science Subject Area of Chemistry; and				
(iv) 12 credit points of Junior units of study from the Science Subject Area of Mathematics.				
ENVI 1002	Geomorphic Environments	6	NB: This unit of study is available to students in the Bachelor of Science (Environmental) and the Bachelor of Land & Water Science only.	Semester 1
Some study of BIOL, CHEM, MATHS at the Advanced level is recommended but not compulsory.				
B. Intermediate units of study				
Candidates are required to enrol in and complete:				
(i) ENVI 2111 and ENVI 2112;				
(ii) at least 6 credit points from SOIL 2003 or CHEM 2404;				
(iii) at least 6 credit points from GEOG 2321 or GEOG 2421;				
(iv) at least 6 credit points from MICR 2024, BIOL 2017, PLNT (2003 or 2903), BIOL (2012 or 2912); and				
(v) up to 18 credit points of Junior or Intermediate units of study from the Science Subject Areas of Agricultural Chemistry, Biology, Chemistry, Geography, Geology and Geophysics, Marine Science, Microbiology, Physics and Soil Science. Units of study in History and Philosophy of Science may be taken on approval of the Chair of the Program Committee for Environmental Science.				
ENVI 2111	Conservation Biology and Applied Ecology	6	P 24 credit points of Junior Science units, including 12 credit points of Junior Biology N ENVI2001	Semester 1
ENVI 2112	Atmospheric Processes and Climate	6	**P** 24 credit points of Junior Science units, including 12 credit points of Junior Chemistry or Physics N ENVI2002	Semester 2
C. Senior units of study				
Candidates are required to enrol in and complete:				
(i) ENVI 3111 and ENVI 3112 and ENVI3113 and ENVI3114; and				
(ii) at least 24 credit points of Intermediate or Senior units of study from the Science Subject Areas of Agricultural Chemistry, Biology, Chemistry, Geography, Geology and Geophysics, Marine Science, Microbiology, Physics and Soil Science. Units of study in History and Philosophy of Science may be taken on approval of the Director for Environmental Science.				
NB: enrolment in at least 6 credit points of the following units of study is highly recommended:- AGCH3030 Rural Environmental Chemistry A, AGCH3031 Rural Environmental Chemistry B, BIOL3006 Ecological Methods, GEOS3014 GIS in Coastal Management.				
ENVI 3111	Environmental Law and Ethics	6	A Intermediate Environmental Science. P 12 credit points of Intermediate Science or Agriculture units. NENVI3001,ENVI3003.	Semester 1
ENVI 3112	Environmental Assessment	6	A Intermediate Environmental Science. P 12 credit points of Intermediate Science or Agriculture units. N ENVI3002, ENVI3004.	Semester 2
ENVI 3113	Environmental Economics and Planning	6	A Intermediate Environmental Science. P 12 credit points of Intermediate Science or Agriculture units. NENVI3001	Semester 1
ENVI 3114	Energy and the Environment	6	A Junior Physics or Intermediate Environmental Science. P 12 credit points of Intermediate Science or Agriculture units. N ENVI3001, PHYS3600.	Semester 2

Table IC: Bachelor of Science (Marine Science)

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
A. Junior units of study				
Candidates are required to enrol in and complete:				
(i) 12 credit points of Junior units of study from the Science Subject Area of Biology;				
(ii) 12 credit points of Junior units of study from the Science Subject Areas of Geography and/or Geology;				
(iii) 12 credit points of Junior units of study from the Science Subject Area of Mathematics;				
(iv) PHYS 1001 or 1002; and				
(v)CHEM 1001 or 1101.				
Some study of Biology, Chemistry, Mathematics or Physics at the Advanced level is recommended but not compulsory.				
B. Intermediate units of study				
Candidates are required to enrol in and complete:				
(i) MARS (2005 or 2905) and MARS (2006 or 2906) and MARS (2007 or 2907);				
(ii) 12 credit points of Intermediate units of study from the Science Subject Area of Biology (students in this course may take any Intermediate Biology unit of study which requires 12 credit points of Junior Chemistry as a prerequisite, provided they have passed at least 6 credit points of Junior Chemistry and at least 6 credit points of Junior Physics); and				
(iii) 18 credit points of Intermediate units of study from Science Subject Areas and/or Civil Engineering units of study CIVL 3401 and CIVL 3402.				
Students may enrol in up to 12 credit points from Tropical Marine Network Program (NTMP) units of study, providing there are places available and they have completed the pre-requisites. Note that NTMP units of study are Senior units and count towards the Senior requirements of the degree.				
MARS 2005	Global Oceans (Introduction)	6	P 24 credit points of Junior units of study from Science Discipline Areas. NMARS2001 NB: This is a qualifying unit for some Senior Marine Science units. Some Senior electives may have additional pre-requisites.	Semester 1
MARS 2905	Global Oceans (Introduction) (Advanced)	6	P 24 credit points of Junior Science units. N MARS2005, MARS2001. NB: This unit of study is available to advanced students only.	Semester 1
MARS 2006	Marine Ecosystems and Geomorphology	6	AMARS2005 P 24 credit points of Junior units of study from Science Discipline Areas. NMARS2002 and GEOG2002 NB: This is a qualifying unit for Senior Marine Science units. Some Senior electives may have additional prerequisites.	Semester 2
MARS 2906	Marine Ecosystems and Geomorphology Adv	6	P 24 credit points of Junior units of study from Science Discipline Areas. N MARS2006, MARS2002, GEOG2002. NB: This unit of study is available to advanced students only.	Semester 2
MARS 2007	Marine Science Field School	6	P 24 credit points of Junior Science units C MARS (2005 or 2905). NMARS2003 NB: This unit of study is available to students in the Bachelor of Science (Marine Science) only.	SI Intensive
MARS 2907	Marine Science Field School (Advanced)	6	P 24 credit points of Junior Science units. C MARS (2005 or 2905) NMARS2007, MARS2003. NB: This unit of study is available to advanced students only.	SI Intensive
C. Senior units of study				
Candidates are required to enrol in and complete:				
(i) at least 36 credit points of Senior units of study from GEOS, NTMP and/or BIOL units from this table, which must include at least one BIOL and one GEOS unit;				
(ii) at least 12 credit points of Intermediate or Senior units of study from the Science subject areas of Biology, Environmental Science, Geography, Geology, Geophysics, Marine Science or Tropical Marine Network Program (NTMP) units.				
NB: No more than 18 credit points of NTMP units may count toward the degree.				
BIOL 3006	Ecological Methods	6	A BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). P 12 credit points of intermediate level Biology; or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. N BIOL (3906 or 3023 or 3923), MARS 3102.	Semester 1
BIOL 3906	Ecological Methods (Advanced)	6	A BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). P Distinction average in 12 credit points of Intermediate Biology; or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. N BIOL (3006 or 3023 or 3923), MARS 3102.	Semester 1
BIOL 3007	Ecology	6	A Although not prerequisites, knowledge obtained from Ecological Methods (BIOL 3006), and Marine Field Ecology (BIOL 3008) and/or Terrestrial Field Ecology (BIOL 3009), or the associated advanced units (BIOL 3906, BIOL 3908 and/or BIOL 3909), is strongly recommended. P 12 credit points of Intermediate Biology; or ENVI 2111 or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. N BIOL (3907, 3024, 3924, 3040, 3940, 3041, 3941, 3042, 3942), MARS 3102.	Semester 2
BIOL 3907	Ecology (Advanced)	6	A Although not prerequisites, knowledge obtained from Ecological Methods (BIOL 3006), and Marine Field Ecology (BIOL 3008) and/or Terrestrial Field Ecology (BIOL 3009), or the associated advanced units (BIOL 3906, BIOL 3908 and/or BIOL 3909), is strongly recommended. Students entering this unit of study should have achieved distinction average. P Distinction average in 12 credit points of Intermediate Biology; or ENVI 2111 or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. N BIOL (3007, 3024, 3924, 3040, 3940, 3041, 3941, 3042, 3942), MARS 3102.	Semester 2
BIOL 3008	Marine Field Ecology	6	A Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly advised. P 12 credit points of Intermediate Biology; or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. N BIOL (3908, 3040, 3940, 3024, 3924), MARS 3102 NB: Dates: 5 July 2006 - 12 July 2006	S2 Intensive

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
BIOL 3908	Marine Field Ecology (Advanced)	6	A Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly advised P Distinction average in 12 credit points of Intermediate Biology; or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. N BIOL (3008, 3040, 3940, 3024, 3924), MARS 3102. NB: Dates: 5 July 2006 - 12 July 2006	S2 Intensive
BIOL 3011	Ecophysiology	6	A BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903). P 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. N BIOL3911 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1
BIOL 3911	Ecophysiology (Advanced)	6	A BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903) P Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. N BIOL3011 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1
BIOL 3013	Marine Biology	6	A MARS2006 P 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. N BIOL3913 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1
BIOL 3913	Marine Biology (Advanced)	6	A MARS2006 P Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. N BIOL3013 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1
GEOS 3003	Dynamics of Continents and Basins	6	P (6 credit points of Intermediate Geoscience units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) N GEOL3101, GEOS3903	Semester 1 a
GEOS 3903	Dynamics of Continents & Basins (Adv)	6	P Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) N GEOL3101, GEO S3 003 NB: A Distinction in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.	Semester 1
GEOS 3009	Coastal Environments & Processes	6	P (6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) N GEOS3909, MARS3003, MARS3105. NB: * Geoscience is the disciplines of Geography, Geology and Geophysics.	Semester 1
GEOS 3909	Coastal Environments and Processes (Adv)	6	P Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))) N GEOS3009, MARS3003, MARS3105 NB: A distinction average in prior Geography or Geology units is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.	Semester 1
GEOS 3014	GIS in Coastal Management	6	P MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. N GEOS3914, MARS3104. NB: * Geoscience is the disciplines of Geography, Geology and Geophysics.	Semester 2
GEOS 3914	GIS in Coastal Management (Advanced)	6	P Distinction average in 12 credit points of intermediate geography or geology units or 12 credit points of intermediate marine science units. N GEOS3014, MARS3104 NB: A distinction average in prior Geography, Geology or Marine Science units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.Department permission required for enrolment.	Semester 2
GEOS 3016	Seafloor Processes & Imaging	6	P 12 credit points of Intermediate Geoscience or ((one of MARS2005 & MARS2905) and (one of MARS2006 & MARS2906)) N GEOS3916, MARS3005, MARS3106. NB: * Geoscience is the disciplines of Geography, Geology and Geophysics.	Semester 2
GEOS 3916	Seafloor Processing and Imaging (Adv)	6	P Ditinction average in (12 credit points of Intermediate Geoscience or ((one of MARS2005 & MARS2905) and (one of MARS2006 & MARS2906))) N GEOS3016, MARS3005, MARS3106 NB: Department permission required for enrolment.	Semester 2
GEOS 3017	Global Energy-Exploration & Exploitation	6	P MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. N GEOS3917, MARS3008. NB: * Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.	Semester 1
GEOS 3917	Global Energy Exploration (Advanced)	6	P Distinction average in MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. N GEOS3017, MARS3008 NB: * Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.	Semester 1
GEOS 3018	Rivers: Science, Policy and Management	6	P (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) N GEOS3918	Semester 1
GEOS 3918	Rivers: Science and Management (Adv)	6	**P** Distinction average in (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)) NGEOS3018	Semester 1
NTMP 3001	Coral Reef Ecosystems	6	A General concepts in Biology P MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. C MARS(2006 or 2906) NB: These units are only available to BSc (Marine Science) students.Department permission required for enrolment.	S2 Intensive
NTMP 3003	Fisheries Biology and Management	6	A General concepts in Biology. P MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. C MARS(2006 or 2906) NB: These units are only available to BSc (Marine Science) students.Department permission required for enrolment.	S2 Intensive
NTMP 3004	Aquaculture	6	A General concepts in Biology. P MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. C MARS(2006 or 2906) NB: These units are only available to BSc (Marine Science) students.Department permission required for enrolment.	S2 Intensive

Unit	*of*	*Study*	*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
NTMP 3005	Coastal Management		6	A General concepts in Biology. P MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. C MARS(2006 or 2906) NB: These units are only available to BSc (Marine Science) students.Department permission required for enrolment.	S2 Intensive

Table ID: Bachelor of Science (Molecular Biology and Genetics)

Unit	*of*	*Study*	*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*					*Session*

A. Junior units of study

Candidates are required to enrol in and complete:

(i) BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1003 or 1902 or 1903) (The combination of BIOL 1901 and BIOL 1902/1903 is the preferred option.); and

(ii) CHEM (1101 or 1901 or 1903 or 1908) and CHEM (1102 or 1902 or 1904 or 1909) (The combination of CHEM 1908 and 1909 is the preferred option. The combination of CHEM 1001 and 1002 is available with special permission.);

(iii) MBLG 1001 andMBLG 1999;

(iv) 12 credit points of Junior units of study from the Science Subject Area of Mathematics (it is recommended that students take units requiring HSC Mathematics Extension 1 or 2 and include some statistics in their choice of Mathematics units of study); and

(v) 6 credit points of other Junior units of study from BSc units of study (Table I). It is recommended that the extra 6 credit points be selected from Junior units of study in Physics or in Computer Science.

MBLG 1999	Molecular	Biology	&	Genetics	Seminar	A	0	CMBLG1001	Semester 2

B. Intermediate units of study

In order to proceed to the Intermediate year, candidates for the BSc (Molecular Biology and Genetics) must achieve a Credit average in Junior units of study. Candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Molecular Biology and Genetics) candidates. Candidates who fail to achieve the required average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

In the Intermediate year candidates are required to enrol in and complete:

(i) MBLG (2071 or 2971) and (2072 or 2972);

(ii) CHEM (2403 or 2913);

(iii) BCHM (2071 or 2971) and BCHM (2072 or 2972);

(iv) MICR (2021 or 2921); and

(v) 12 Credit points of Intermediate Science units of study. (In 1st Semester, CHEM 2401/2911/2915 or BIOL (2016/2916) and in 2nd Semester, MICR (2022 or 2922) and CHEM 2402/2912/2916, are strongly recommended as the Science options.)

Note: Students wishing to proceed to the Senior units of Chemistry or Microbiology must complete 12 credit points of Intermediate units in the appropriate discipline area.

C. Senior units of study

In order to proceed to the Senior year, candidates for the BSc (Molecular Biology and Genetics) must achieve a Credit average in Intermediate units of study. Candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Molecular Biology and Genetics) candidates. Candidates who fail to achieve the required average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

In the Senior year candidates are required to enrol in and complete:

(i) MBLG 3999; and

(ii) BCHM (3071 or 3971) and BCHM (3081 or 3981); and

(iii) BIOL (3018 or 3918) and (3027 or 3927); and

(iv) Semester 2 elective units of study: Select 24 credit points from BCHM (3072 or 3972), BCHM (3082 or 3982), BCHM (3092 or 3992), BIOL (3025 or 3925), BIOL (3026 or 3926), CHEM (3114 or 3914), CHEM (3115 or 3915), CHEM (3116 or 3916), CHEM (3117 or 3917), MICR (3012 or 3912), MICR (3022 or 3922).

NOTE: The July semester enrolment must include a unit of study which incorporates the seminar and discussion program.

Other suitable options incorporating molecular biology and genetics would be considered by the Program Committee.

MBLG 3999	Molecular Biology & Genetics Seminar B	0		Semester 2

Honours units of study

Candidates for the Honours degree in Molecular Biology and Genetics shall complete an Honours program incorporating research in molecular biology and genetics in a Department or School in the Faculty of Science.

Table IE: Bachelor of Science (Molecular Biotechnology)

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
A. Junior units of study				
Candidates are required to enrol in and complete:				
(i) at least 12 credit points of Junior units of study from the Science Subject Area of Biology;				
(ii) CHEM 1908 and CHEM 1909 or at least 12 credit points of Junior units of study from the Science Subject Area of Chemistry (with special permission);				
(iii) at least 12 credit points of Junior units of study from the Science Subject Area of Mathematics;				
(iv)MBLG 1001; and				
(v) at least 6 credit points of elective units of study.				
CHEM 1908	Chemistry 1 Life Sciences A (Advanced)	6	P UAI of at least 93 and HSC Chemistry result in band 5 or 6, or Distinction or better in a University level Chemistry unit, or by invitation. C Recommended concurrent units of study: 6 credit points of Junior Mathematics N CHEM (1002 or 1102 or 1902 or 1904) NB: This unit of study is available to students enrolled in the Bachelor of Medical Science, the Bachelor of Science (Molecular Biology and Genetics), the Bachelor of Science (Nutrition) and the Bachelor of Science (Molecular Biotechnology) only.Department permission required for enrolment.	Semester 1
CHEM 1909	Chemistry 1 Life Sciences B (Advanced)	6	P CHEM 1908 or equivalent C Recommended concurrent units of study: 6 credit points of Junior Mathematics. N CHEM (1001 or 1101 or 1901 or 1903) NB: This unit of study is available to students enrolled in the Bachelor of Medical Science, the Bachelor of Science (Molecular Biology and Genetics), the Bachelor of Science (Nutrition) and the Bachelor of Science (Molecular Biotechnology) only.	Semester 2
B. Intermediate units of study				
Candidates are required to enrol in and complete 48 credit points of Intermediate units of study including:				
(i)MOBT2102;				
(ii) MBLG (2071 or 2971) and MBLG (2072 or 2972);				
(iii) CHEM (2401/2911/2915) and CHEM (2403/2913);				
(iv) BCHM (2071 or 2971); and				
(v) at least 12 credit points chosen from Intermediate units of study in the Subject Areas of Animal Science, Biochemistry, Biological Sciences, Chemical Engineering, Chemistry, Computational Science, Computer Science and Information Systems, Immunology, Mathematics and Statistics, Microbiology, Pharmacology and Plant Science.				
MOBT 2102	Molecular Biotechnology 2	6	P 12 credit points of Junior Biology and 12 credit points of Junior Chemistry N MOBT2001 NB: This unit of study is only available to students in the BSc (Molecular Biotechnology).	Semester 2
C. Senior units of study				
Candidates are required to enrol in and complete 48 credit points of Senior units of study including:				
(i) MOBT 3101 and MOBT 3102;				
(ii) BIOL 3027/3927;				
(iii) 6 credit points of CHEM from CHEM 3111/3911 or CHEM 3110/3910 or CHEM 3114/3914 or CHEM 3115/3915 or CHEM 3116/3916				
(iv) 6 credit points of BCHM or MICRO (Highly recommended: BCHM 3092/3982 or MICR 3022 /3922 or BCHM 3081/3981)				
(v) at least 18 credit points from Senior units of study in the Subject Areas of: Agricultural Chemistry, Animal Science, Biochemistry, Biological Sciences, Chemical Engineering, Chemistry, Computational Science, Computer Science and Information Systems, Immunology, Mathematics and Statistics, Microbiology, Pharmacology and Plant Sciences.				
MOBT 3101	Molecular Biotechnology 3A	6	A MBLG (2072 or 2972). PMOBT2102 NMOBT2002 NB: NB: This unit of study is only available to students in the BSc (Molecular Biotechnology).	Semester 1
MOBT 3102	Molecular Biotechnology 3B	6	PMOBT2002 orMOBT3101 NMOBT3002 NB: NB: This unit of study is only available to students in the BSc (Molecular Biotechnology).	Semester 2

Table IF: Bachelor of Science (Nutrition)

Unit	*of*	*Study*	*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*

The Bachelor of Science (Nutrition) is a 4 year Honours degree. To complete the degree, a candidate must gain Credit for at least 192 credit points including the Honours course in either Nutrition and Dietetics, or Nutrition.

A. Junior units of study

Candidates are required to enrol in and complete:

(i) BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1902 or 1003 or 1903);

(ii) 12 credit points of Junior Chemistry;

(iii) 12 credit points of Junior units of study from the Science Subject Area of Mathematics;

(iv) 6 credit points of other Junior units of study from the Science Subject Areas of Computer Science, Physics or Psychology; and

(v)MBLGlOOl.

B. Intermediate units of study

In order to proceed to the Intermediate year, candidates for the BSc (Nutrition) must achieve a WAM of 60 in their Junior year. Candidates who fail to maintain the required average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Nutrition) candidates. Candidates who fail to achieve the required average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

In the Intermediate year candidates are required to enrol in and complete:

(i) NUTR 2911 and NUTR 2912;

(ii) MBLG (2071 or 2971);

(iii) BCHM (2072 or 2972);

(iv) PHSI 2005 and PHSI 2006; and

(v) MICR 2021 and MICR 2022 or at least 12 credit points of Intermediate units of study (6 credit points each semester) from the Science Subject Areas of Chemistry or Pharmacology.

NUTR 2911	Food Science Introductory (Advanced)	6	P MBLG 1001 and CHEM (1001 or 1101 or 1901 or 1903 or 1909) and CHEM (1002 or 1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1101 or 1901) andBIOL (1002 or 1003 or 1902 or 1903). For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree completion of all Junior units in the table of units for this course. N NUTR2901	Semester 1
NUTR 2912	Nutritional Science Introductory (Adv)	6	ANUTR2911 PMBLG1001 and CHEM (1001 or 1101 or 1901 or 1903 or 1909) and CHEM (1002 or 1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1003 or 1902 or 1903). For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree completion of all Junior units in the table of units for this course. N NUTR2902	Semester 2

C. Senior units of study

In order to proceed to the Senior year, candidates for the BSc (Nutrition) must achieve a WAM of 65 in their Intermediate year. Candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Nutrition) candidates.

In the Senior year candidates are required to enrol in and complete:

(i) NUTR 3911, 3921, 3912 and 3922;

(ii) BCHM (3082 or 3982) and BCHM (3072 or 3972); and

(iii) AGCH (3025 and 3026) or 12 credit points from the following Senior units of study: BCHM (3071 or 3971), BCHM (3081 or 3981), MICR (3001 or 3901), VIRO (3001 or 3901), NEUR (3001 or 3901), NEUR (3002 or 3902).

NUTR 3911	Nutritional Assessment Methods	6	PNUTR2911 andNUTR2912 NNUTR3901	Semester 1
NUTR 3922	Nutrition and Chronic Disease	6	PNUTR2911 andNUTR2912 NNUTR3902	Semester 2
NUTR 3912	Community and Public Health Nutrition	6	PNUTR2911 andNUTR2912 NNUTR3902	Semester 2
NUTR 3922	Nutrition and Chronic Disease	6	PNUTR2911 andNUTR2912 NNUTR3902	Semester 2

D. Honours units of study

In order to proceed to the Honours year, candidates must achieve a WAM of at least 65 in their Senior year, and results of at least Credit (65) in NUTR 3911, 3921, 3912 and 3922.

Candidates who fail to achieve the required results across the Senior units of study will be transferred to candidature for the Bachelor of Science degree, and if they have otherwise completed the requirements for the BSc Pass degree, will be awarded the Bachelor of Science with a major in Nutrition.

Candidates enrol in and complete either:

(i) Bachelor of Science (Nutrition) Nutrition and Dietetics Honours: NUTR 4001 and NUTR 4002 and NUTR 4999; OR

(ii) Bachelor of Science (Nutrition) Nutrition Honours: NUTR 4101, NUTR 4102, NUTR 4103 and NUTR 4104.

E. Combined degree program: Bachelor of Applied Science (Exercise and Sport Science)/Bachelor of Science (Nutrition)

Candidates must complete over 10 semesters the following units of study. In order to proceed from Year 1 to Year 2 of the program candidates must achieve a year WAM of at least 60. In order to proceed to the following years of the program a candidate must achieve at least 65 in each of NUTR 2911, NUTR 2912, NUTR 3911, NUTR 3921, NUTR 3912 and NUTR 3922, and a year WAM of at least 65 in Years 2-4. Candidates who fail to maintain these results in any year will be transferred to either the BSc(LHOOO), the BAppSc(ExSpSc)(SH088) or the BAppSc(ExSpSc&Nutr)(SHl 15).

Unit	*of*	*Study*	*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
For information on units from the BAppSc (ExSpSc), please refer to the Handbook of the Faculty of Health Sciences.					
Yearl					
Candidates are required to enrol in and complete in their first year:					
(i) 12 credit points of Junior Chemistry;					
(ii) BACH 1161;					
(ii)BIOS 1159, 1133 and 1160;					
(iii) EXSS 1018 and 1033; and					
(v)MBLGlOOl.					
Year 2					
Candidates are required to enrol in and complete in their second year:					
(i) BCHM 2072 and BIOS 2098;					
(ii) EXSS 2019, 1029 and 2022;					
(iii) MATH 1015 and MBLG 2071; and					
(iv) NUTR 2911 and NUTR 2912.					
Year 3					
Candidates are required to enrol in and complete in their third year:					
(i) EXSS (2016, 2018, 2023, 2024, 2025, 2026 and 2027);					
(ii) MATH 1011 and STAT 2012.					
MATH 1011	Life Sciences Calculus		3	A HSC Mathematics N MATH (1111 or 1001 or 1901 or 1906).	Semester 1, Summer
STAT 2012	Statistical Tests		6	A STAT (2011 or 2002) P MATH (1005 or 1905 or 1015) N STAT (2004 or 2912)	Semester 2
Year 4 (First offered in 2007)					
Candidates are required to enrol in and complete in their fourth year:					
(i) NUTR 3911, NUTR 3921, NUTR 3912 and NUTR 3922;					
(ii) EXSS 3037 and EXSS3042;					
(iii) BCHM 3082 and BCHM 3072.					
Students can exit here with BAppSc(Exercise, Sports Science and Nutrition).					
Year 5 (First offered in 2008)					
Honours units of study					
Candidates intending to graduate with Honours in Nutrition and Dietetics are required to enrol in and complete in their fifth year:					
(i)NUTR 4001 and NUTR 4002 and NUTR 4999					
Candidates intending to graduate with Honours in Nutrition are required to enrol in and complete in their fifth year:					
(i) NUTR 4101 and NUTR 4102 and NUTR 4103 and NUTR 4104.					

Table II: Law units of study

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
LAWS 1006	Foundations of Law	6	NB: Unit is part of Combined Law.	Semester 1
LAWS **1010**	Torts	6	**P** LAWS 1000 or LAWS 1006 Foundations of Law NLAWS3 001 Torts NB: Unit is part of the Combined Law program for students commencing in 2006.	Semester 2
LAWS **1008**	Legal Research	0		Semester 1, Semester 2
LAWS **3000**	Federal Constitutional Law	10	**P** LAWS 1000 or 1006, Foundations of Law NB: Unit is part of Combined Law.	Semester 1
LAWS 3002	Law, Lawyers and Justice	10	NB: Unit is part of the Combined Law program.	Semester 2

NOTE: The Faculty of Law is undertaking a curriculum review, anticipated to be completed in 2007. Combined law students are expected to complete 48 credit points of Law units of study in the first three years of the combined degree. Third year combined law students who are not able to accumulate 48 credit points of Law units using the unit of study codes in this table must contact the Faculty of Law for alternative unit of study codes for Federal Constitutional Law and Law, Lawyers and Justice.

Table III: Bachelor of Information Technology

Unit of Study		CP	A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition	Session
Table III(i) Core Units				
Junior units of study				
SOFT 1001	Software Development 1	6	A HSC Mathematics Extension 1 N SOFT 1901, COMP (1001 or 1901), DECO2011	Semester 1, Semester 2
SOFT 1901	Software Development 1 (Adv)	6	A HSC Mathematics Extension 1 Q UAI at least that for acceptance into BSc(Adv) degree program. N May not be counted with SOFT 1001 or COMP (1001 or 1901) NB: Entry requires departmental permission, except for students in BSc(Adv), BCST(Adv) or BIT degreesDepartment permission required for enrolment.	Semester 1, Semester 2
SOFT 1002	Software Development 2	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 N SOFT 1902 or COMP (1002 or 1902) NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 1, Semester 2, Summer
SOFT 1902	Software Development 2 (Adv)	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) and Distinction in one of these. N May not be counted with SOFT 1002 or COMP (1002 or 1902) or DECO2011 NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 1, Semester 2
Intermediate units of study				
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO 1000 level P (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. N INFO (2000 or 2810 or 2900)	Summer, Semester 1
INFO 2810	Systems Analysis and Modelling (Adv)	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 level P (INFO(1003 or 1903 orl000)orISYS1003orINFS1000orSOFT(1001orl901)orCOMP(1001orl901)or(6creditpoints of COSC units of study) or DECO2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. N INFO (2000 or 2110 or 2900)	Semester 1
SOFT 2130	Software Construction 1	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). NB: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.	Semester 2, Summer
SOFT 2830	Software Construction 1 (Adv)	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) and Distinction in one of these, or in any SOFT unit at 2000-level or above. N COMP (2004 or 2904) or SOFT (2004 or 2904 or 2130). NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 2
Table Ill(ii) Foundation Electives				
Intermediate units of study				
COMP 2160	Data Structures	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP(2111 or 2811 or 2002 or 2902 or 2860)	Semester 1
COMP 2860	Data Structures (Advanced)	6	P [SOFT (1002 or 1902) or COMP (1002 or 1902)] and Distinction in one COMP, SOFT or MATH unit. N COMP(2111 or 281 lor 2002 or 2902 or 2160)	Semester 1
INFO 2120	Database Systems 1	6	P INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC) or DECO2011 N INFO (2005 or 2820 or 2905).	Semester 2
INFO 2820	Database Systems 1 (Advanced)	6	A Basics of data modelling, experience working with information technology tools P INFO(1003 or 1903 or 1000) orISYS1003 orlNFSlOOO or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DEC2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. N INFO (2005 or 2120 or 2905)	Semester 2
ISYS 2140	Information Systems	6	A Understanding of the roles and functions of information technology tools for document processing, modelling, database management etc. Experience in the use of these tools to solve practical problems and to present the results effectively. Awareness of the main concepts of programming and of a program running in a computer (a process) PINFO(1003 or 1903 or 1000) orISYS1003 orlNFSlOOO. NISYS (2006 or 2007)	Semester 1
NETS 2150	Fundamentals of Networking	6	A Basic computer organization P SOFT(1002 or 1902) or COMP(1001 or 1901) or DECO2011 N NETS (2009 or 2909 or 2850), ELEC (3506 or 3504)	Semester 1
NETS 2850	Fundamentals of Networking (Advanced)	6	A Basic computer organization. P SOFT(1002 or 1902) or COMP(1001 or 1901) or DECO2011 and Distinction in one NETS or SOFT unit. N May not be counted with NETS (2009 or 2909 or 2150) or ELEC (3504 or 3506).	Semester 1
Table Ill(iii) Junior and Intermediate IT-related Electives				
Junior units of study				
ACCT 1003	Financial Accounting Concepts	6	N Terminating unit. Cannot be counted with ACCT1001 and ACCT1002.	Semester 1
ACCT 1004	Management Accounting Concepts	6	N Terminating unit. Cannot be counted with ACCT 1001 and ACCT 1002.	Semester 2
ARIN 1000	History and Theory of Informatics	6	C ISYS 1003 or INFO 1000 or INFO 1003 N Available to BA Informatics, BCST and BIT students only	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
CLAW 1001	Commercial Transactions A	**6**		Semester 1, Semester 2
CLAW 1002	Commercial Transactions B	**6**	PCLAW1001	Semester 2
COSC 1001	Computational Science in Matlab	**3**	A HSC Mathematics N May not be counted with COSC 1901.	Semester 2
COSC 1901	Computational Science in Matlab (Adv)	**3**	A HSC Mathematics P UAI of at least 90, or COSC 1902, or a distinction or better in COSC 1002, SOFT (1001, 1002, 1901 or 1902). N May not be counted with COSC 1001.	Semester 2
COSC 1002	Computational Science in C	**3**	A HSC Mathematics N May not be counted with COSC 1902.	Semester 2
COSC 1902	Computational Science in C (Adv)	**3**	A HSC Mathematics P UAI of at least 90, or COSC 1901, or a distinction or better in COSC 1001, SOFT (1001, 1002, 1901 or 1902). N May not be counted with COSC 1002.	Semester 2
DECO 1005	Hist & Theory of Multimedia & Animation	**6**	N DECO 2605	Semester 2
DECO 1006	Understanding Design & Cognition	**6**	N DECO 1004	Semester 1
DECO 1007	Design Data Mgmt & Product Modelling	**6**	N DECO 2004, INFO 2005.	Semester 1
ELEC 1601	Professional Computer Engineering	**6**	A HSC Mathematics extension 1. N NETS2008 Computer System Organisation, NETS2908 Computer System Organisation (Adv), COMP2001 Computer Systems, COMP2901 Computer Systems (Adv).	Semester 1, Summer
ELEC 1103	Professional Electronic Engineering	**6**	A HSC Physics, HSC Mathematics extension 1. N ELEC 1102 Foundations of Electronic Circuits.	Semester 2
INFO 1003	Foundations of Information Technology	**6**	A Basic computer operations N INFO 1000, INFS 1000, ISYS1003, INFO 1903.	Semester 1, Semester 2
INFO 1903	Foundations of Information Tech (Adv)	**6**	A Basic computer operations P UAI at least that for acceptance into BSc(Adv) degree program. N INFO1003, ISYS1003, INFO1000, INFS1000. NB: Department permission required for enrolment.	Semester 1
INFS 1000	Business Information Systems Foundations	**6**	NISYS1003 or INFO 1000 or INFO 1003 or INFO 1903	Semester 1, Semester 2, Summer
INFS 1005	Business Information Systems	**6**	P INFS 1000 or INFO 1000 or INFO 1003 or INFO 1903 or IS YS 1003; ACCT1001 or ACCT1004 N ACCT2003;INFS2000	Semester 1, Semester 2
MATH 1001	Differential Calculus	**3**	A HSC Mathematics Extension 1 N MATH 1011 or 1901 or 1906 or 1111	Semester 1, Summer
MATH 1002	Linear Algebra	**3**	A HSC Mathematics Extension 1 N MATH 1902 or 1012 or 1014	Semester 1, Summer
MATH 1003	Integral Calculus and Modelling	**3**	A HSC Mathematics Extension 2 or MATH 1001 or MATH 1111 N MATH 1013 or 1903 or 1907	Semester 2, Summer
MATH 1004	Discrete Mathematics	**3**	A HSC Mathematics Extension 1 N MATH 1904 or MATH2011	Semester 2, Summer
MATH 1005	Statistics	**3**	A HSC Mathematics N MATH (1905 or 1015) or ECMT Junior units of study or STAT (1021 or 1022)	Semester 2, Summer
MATH 1011	Life Sciences Calculus	**3**	A HSC Mathematics N MATH (1111 or 1001 or 1901 or 1906).	Semester 1, Summer
MATH 1013	Differential and Difference Equations	**3**	A HSC Mathematics or MATH 1111 N MATH (1003 or 1903 or 1907).	Semester 2
MATH 1014	Introduction to Linear Algebra	**3**	A HSC Mathematics or MATH 1111 N MATH 1012, MATH 1002, MATH 1902	Semester 2
MATH 1015	Life Science Statistics	**3**	A HSC Mathematics N MATH (1005 or 1905) or STAT (1021 or 1022) or ECMT Junior units of study.	Semester 1
MATH 1111	Introduction to Calculus	**6**	A At least Year 10 Mathematics N MATH1001, MATH1901, MATH1011, MATH1906 NB: Students with HSC Mathematics/Extension 1/Extension 2 (or equivalent) are prohibited.	Semester 1
MATH 1901	Differential Calculus (Advanced)	**3**	A HSC Mathematics Extension 2 N MATH (1111 or 1011 or 1001 or 1906)	Semester 1
MATH 1902	Linear Algebra (Advanced)	**3**	A HSC Mathematics Extension 2 N MATH (1002 or 1012 or 1014)	Semester 1
MATH 1903	Integral Calculus and Modelling Advanced	**3**	A HSC Mathematics Extension 2 or Credit or better in MATH (1001 or 1901) N MATH (1003 or 1013 or 1907)	Semester 2
MATH 1904	Discrete Mathematics (Advanced)	**3**	A HSC Mathematics Extension 2 N MATH 1004 or MATH2011	Semester 2
MATH **1905**	Statistics (Advanced)	3	A HSC Mathematics Extension 2 N MATH (1005 or 1015) or ECMT Junior units of study or STAT (1021 or 1022)	Semester 2

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
Intermediate units of study				
ARIN 2610	Web Production	6	**P** 18 junior credit points N ARIN 2100.Available to students enrolled in the BAI and BA.	Semester 1, Semester 2, Summer
CLAW 2206	Legal Issues for e-Commerce	6	**P** Any 8 full semester first year units of study N CLAW2006	Semester 1, Semester 2
DECO 2010	Collaborative Virtual Environments	6	P DECO (1100 and 1200) or (2101 and 2102) or INFO (1000 or 1003) N DECO 2005. NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing students will receive preference.	Semester 1
DECO 2013	Generative Design Systems	6	P DECO 2011 or SOFT 1001 N DECO (2601 or 2602 or 2603) NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing students will receive preference.	Semester 2
DECO 2101	Digital Image Design & Rep	6	N DECO (1001 or 1100) NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Architecture students will receive preference. Not available in the Bachelor of Design Computing.	Semester 1
DECO 2102	Interactive Multimedia Design	6	P DECO 2101 N DECO (1002 or 2002 or 1200) NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Architecture students will receive preference. Not available in the Bachelor of Design Computing.	Semester 2
DECO 2103	3D Modelling	6	N DECO 1008 NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Architecture students will receive preference. Not available in the Bachelor of Design Computing.Department permission required for enrolment.	Semester 2
DECO 2606	Real Time 3D Multimedia	6	P DECO (1008 or 2103) and (SOFT 1001 or DECO 2011) NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing and BST students will receive preference.	Semester 2
ELEC 2103	Simulation & Numerical Solutions in Eng.	6	A 36 credit points including ELEC1102 Foundations of Electronic Engineering or ELEC1103 Professional Electronic Engineering. N ELEC2102 Engineering Computing, COSC1001 Computational Science in Matlab, COSC1901 Computational Science in Matlab (Advanced).	Semester 1
ELEC 2104	Electronic Devices and Basic Circuits	6	A ELEC1102 Foundations of Electronic Circuits or ELEC1103 Professional Electronic Engineering. N ELEC2401 Introductory Electronics.	Semester 1
ELEC 2302	Signals and Systems	6	A MATH 1001 Differential Calculus and MATH 1002 Linear Algebra and MATH 1003 Integral Calculus and Modelling. N ELEC2301 Signals & Systems, MATH3019 Signal Processing, MATH3919 Signal Processing (Adv).	Semester 2
ELEC 2602	Digital System Design	6	A ELEC 1101 Foundations of Computer Systems or ELEC 1601 Professional Computer Engineering. N ELEC3601 Digital Systems Design, ELEC3608 Digital Systems Design.	Semester 2
INFS 2010	Managing Information & Knowledge Assets	6	A INFS 1005 P INFS 1000 or INFO 1000 or INFO 1003 or INFO 1903 or ISYS1003 NINFS3015	Semester 1
INFS 2020	Business Process Integration & Modelling	6	A INFS 1005 P INFS 1000 or INFO 1003 or INFO 1903 or ISYS1003 NINFS2005	Semester 2
INFS 2030	e-Commerce Business Models	6	P INFS 1000 or INFO 1000 or INFO 1003 or INFO 1903 or ISYS1003 N ACCT3006, INFS3020	Semester 2
MATH 2916	Working Seminar A (SSP)	3	P By invitation, High Distinction average over 12 credit points of Advanced Junior Mathematics NB: Department permission required for enrolment.	Semester 1
MATH 2917	Working Seminar B (SSP)	3	P By invitation, High Distinction average over 12 credit points of Advanced Junior Mathematics NB: Department permission required for enrolment.	Semester 2
MATH 2061	Linear Mathematics and Vector Calculus	6	P MATH (1111 or 1001 or 1901 or 1906) and MATH (1014 or 1002 or 1902) and MATH (1003 or 1903 or 1907) N MATH (2001 or 2901 or 2002 or 2902 or 2961 or 2067)	Summer, Semester 1
MATH 2961	Linear Mathematics & Vector Calculus Adv	6	P MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) N MATH (2001 or 2901 or 2002 or 2902 or 2061 or 2067)	Semester 1
MATH 2063	Math Computing and Nonlinear Systems	6	P MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) N MATH (2003 or 2903 or 2006 or 2906 or 2963)	Semester 1
MATH 2963	Math Computing & Nonlinear Systems (Adv)	6	P MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) N MATH (2003 or 2903 or 2006 or 2906 or 2063)	Semester 1
MATH 2065	Partial Differential Equations (Intro)	6	P MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) N MATH (2005 or 2905 or 2965 or 2067)	Semester 2
MATH 2965	Partial Differential Equations Intro Adv	6	P MATH (2961 or Credit in 2061) or {MATH (2901 or Credit in 2001) and MATH (2902 or Credit in 2002)} N MATH (2005 or 2905 or 2065 or 2067)	Semester 2
MATH 2962	Real and Complex Analysis (Advanced)	6	P MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003) N MATH (2007 or 2907)	Semester 1
MATH 2068	Number Theory and Cryptography	6	P 9 credit points of Junior level Mathematics including MATH (1002 or 1902) N MATH (3024 or 3009)	Semester 2
MATH 2968	Algebra (Advanced)	6	P 9 credit points of Junior Mathematics (advanced level or Credit at normal level) including (MATH 1902 or Credit in MATH 1002) N MATH (2908 or 2918 or 2008)	Semester 2
MATH 2069	Discrete Mathematics and Graph Theory	6	P 6 credit points of Junior level Mathematics N MATH (2011 or 2009 or 2969)	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
MATH 2070	Optimisation and Financial Mathematics	6	A MATH (1003 or 1903 or 1907) P MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) N MATH (2010 or 2033 or 2933 or 2970), ECMT3510 NB: Students may enrol in both MATH2070 and MATH3075 in the same semester	Semester 2
MATH 2970	Optimisation & Financial Mathematics Adv	6	A MATH (1903 or 1907) or Credit in MATH 1003 P MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) N MATH (2010 and 2033 and 2933 and 2070) NB: Students may enrol in both MATH2970 and MATH3975 in the same semester	Semester 2
STAT 2011	Statistical Models	6	**P** MATH (1001 or 1901 or 1906 or 1011) and [MATH (1005 or 1905 or 1015) or STAT1021] N STAT (2901 or 2001 or 2911)	Semester 1
STAT 2911	Probability and Statistical Models (Adv)	6	P MATH (1903 or 1907 or Credit in 1003) and MATH (1905 or Credit in 1005) N STAT (2001 or 2011 or 2901)	Semester 1
STAT 2012	Statistical Tests	6	A STAT (2011 or 2002) P MATH (1005 or 1905 or 1015) N STAT (2004 or 2912)	Semester 2
STAT 2912	Statistical Tests (Advanced)	6	A STAT (2911 or 2901) P MATH 1905 or Credit in MATH 1005 N STAT (2004 or 2012)	Semester 2

Table Ill(iv) Senior and Honours IT-related Electives

Senior units of study

BIOL 3027	Bioinformatics and Genomics	6	P 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. N BIOL3927 NB: This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.	Semester 1
cose 3011	Scientific Computing	6	A Programming experience in MATLAB P 12 credit points chosen from Junior Mathematics and Statistics, 12 creditpoints of Intermediate units in Science subject areas. N COSC3911, COSC 3001, COSC 3901, PHYS3301,PHYS3901	Semester 1
COSC 3911	Scientific Computing (Advanced)	6	A Programming experience in MATLAB P 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. N COSC3011, COSC 3001, COSC 3901, PHYS3301, PHYS3901	Semester 1
COSC 3012	Parallel Computing & Visualisation	6	A Programming experience in C and MATLAB or equivalent. P 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. N COSC3912, COSC 3002, COSC 3902, COSC3601, PHYS3303, PHYS3933	Semester 2
COSC 3912	Parallel Computing & Visualisation (Adv)	6	A Programming experience in C and MATLAB or equivalent. P 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. N COSC3012, COSC 3002, COSC 3902, COSC3601, PHYS3303, PHYS3933	Semester 2
COMP 3308	Introduction to Artificial Intelligence	6	A Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO 1903 or SOFT 1002 P 18 crpts of 2000-level units. N May not be counted with COMP(3002 or 3902 or 3608).	Semester 1
COMP 3608	Intro, to Artificial Intelligence (Adv)	6	A Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO 1903 or SOFT 1002. P 18 crpts of 2000-level units, and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. N May not be counted with COMP(3002, 3902 or 3308).	Semester 1
COMP 3309	Algorithms	6	A Discrete mathematics. P COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902). N May not be counted COMP(3111 or 3811), COMP(3001 or 3901) or COMP3609.	Semester 1
COMP 3609	Algorithms (Advanced)	6	A Discrete mathematics. P COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902), and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. N COMP(3111 or 3811 or 3001 or 3901 or 3309)	Semester 1
COMP 3310	Theory of Computation	6	P COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902). N COMP (2003 or 2903 or 3610)	Semester 2
COMP 3610	Theory of Computation (Advanced)	6	P COMP (2160 or 2860 or 2111 or 2811 or 2002 or 2902), and Distinction in a COMP, SOFT, or MATH unit at 2000-level or above. N COMP (2003 or 2903 or 3310)	Semester 2
DECO 3003	Design Computing Research Opportunity	6	A Computer programming. P 96 credit points and minimum WAM of 65. NB: Non Architecture students may apply directly to the Faculty of Architecture.Department permission required for enrolment.	Semester 2
DECO 3005	Advanced Interactive Multimedia Design	6	**P** DECO (1200 or 2102 or 2002) N DESC 9142. NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing and BST students will receive preference.	Semester 1
DECO 3006	Principles of 3D Animation	6	P DECO (1003 or 1008 or 2103) N DESC 9019 or 9141 NB: First preference given to third year students in the Bachelor of Design Computing or the Bachelor of Science & Technology. Other students may apply directly to the Faculty of Architecture on a quota basis.Department permission required for enrolment.	Semester 1
DECO 3007	Designing Tangible Computing	6	P DECO (1200 or 2102) and (DECO 2011 or SOFT 1001) NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing and BST students will receive preference.Department permission required for enrolment.	Semester 2
EBUS 3003	e-Business System Design	6	A SOFT 1002 Software Development 2 and (ISYS 1003 Foundations of Information Technology or ELEC1601 Professional Computer Engineering or ELEC1101 Foundations of Computer Systems). **N** EBUS3001 Introduction to E-Commerce Systems.	Semester 1
EBUS 3004	e-Business Programming	6	A EBUS3001 Introduction to E-Commerce Systems or EBUS3003 E-Business System Design. N EBUS3002 E-Commerce Website Programming.	Semester 2
ELEC 3305	Digital Signal Processing	6	**A** ELEC2301 Signals & Systems or ELEC 2302 Signals & Systems. N ELEC 3303 Digital Signal Processing.	Semester 1
ELEC 3404	Electronic Circuit Design	6	A ELEC2401 Introductory Electronics or ELEC2104 Electronic Devices and Basic Circuits. NELEC3401 Electronic Devices and Circuits.	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
ELEC 3405	Comunications Electronics and Photonics	6	A ELEC2401 Introductory Electronics or ELEC2104 Electronic Devices and Basic Circuits. NELEC3402 Communications Electronics.	Semester 2
ELEC 3505	Communications	6	**A** ELEC2301 Signals and Systems or ELEC2302 Signals and Systems. N ELEC3503 Introduction to Digital Communications.	Semester 1
ELEC 3506	Data Comunications and the Internet	6	A SOFT2004 Software Development Methods 1 or COMP2004 Programming Practice or SOFT2130 Software Construction. N NETS2150 Fundamentals of Networking, NETS2009 Network Organisation, NETS2909 Network Organisation (Adv), NETS3007 Network Protocols, NETS3907 Network Protocols (Advanced), ELEC3504 Data Communications and the Internet, ELEC4501 Data Communication Networks.	Semester 2
ELEC 3605	Engineering Software Requirements	6	A SOFT2004 Software Development Methods 1 or SOFT2130 Software Construction. N ELEC4604 Engineering Software Requirements.	Semester 1
ELEC 3606	Software Project Management	6	A SOFT2004 Software Development Methods 1 or SOFT2130 Software Construction. N ELEC4704 Software Project Management.	Semester 2
ELEC 3607	Embedded Computing	6	A ELEC 1101 Foundations of Computer Systems or ELEC2602 Digital System Design. N ELEC2601 Microcomputer Systems.	Semester 2
ELEC 3702	Management for Engineers	6	N ELEC3701 Management for Engineers, ENGG2003 Introduction to Engineering Management	Semester 1
INFO 3402	Management of IT Projects and Systems	6	P INFO (2000 or 2110 or 2810 or 2900). N May not be counted with ISYS (3000 or 3012).	Semester 1
INFO 3404	Database Systems 2	6	P INFO(2120 or 2820 or 2005 or 2905). N May not be counted with INFO (3005 or 3504 or 3905) or COMP (3005 or 3905).	Semester 2
INFO 3504	Database Systems 2 (Adv)	6	P INFO (2005 or 2120 or 2820 or 2905),and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above. N May not be counted with INFO (3005 or 3404 or 3905) or COMP (3005 or 3905).	Semester 2
INFS 3030	IT Assurance and Control	6	AINFS2010 or INFS3015, INFS2020 or INFS2005 PINFS1005 or INFS2000 NINFS3010	Semester 2
INFS 3040	Enterprise Systems	6	AINFS2020 P INFS 1005 or INFS2000 NINFS3005	Semester 1
INFS 3050	Supporting Business Intelligence	6	AINFS2010 (or INFS3015) P INFS 1005 (or INFS2000)	Semester 2
INFS 3060	Management Information Systems	6	P 24 credit points in INFS units of study NINFS3000	Semester 1, Semester 2
ISYS 3400	Information Systems Project	6	P (INFO3402 or ISYS3012) and (ISYS (3401 or 3015) or ARIN2000). N May not be counted with ISYS3207	Semester 2
ISYS 3401	Analytical Methods & Information Systems	6	P ISYS (2140 or 2006) and INFO (2000 or 2110 or 2810 or 2900) and (MATH(1005 or 1015 or 1905) or STAT 1021) and (ARIN1000 or ENGL 1050 or ENGL 1005 orLNGSlOOl orLNGS1002 orLNGS1005 or any HPSC unit) N May not be counted with ISYS3015	Semester 1
ISYS 3403	IT Systems in Arts and Humanities	6	P INFO (2000 or 2110 or 2810 or 2900) and INFO (2005 or 2120 or 2820 or 2905). N May not be counted with ISYS3113 or EBUS(3002 or 3004).	Semester 1
GEOS 3014	GIS in Coastal Management	6	P MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. N GEOS3914, MARS3104. NB: * Geoscience is the disciplines of Geography, Geology and Geophysics.	Semester 2
GEOS 3914	GIS in Coastal Management (Advanced)	6	P Distinction average in 12 credit points of intermediate geography or geology units or 12 credit points of intermediate marine science units. N GEOS3014, MARS3104 NB: A distinction average in prior Geography, Geology or Marine Science units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.Department permission required for enrolment.	Semester 2
MATH 3065	Logic and Foundations	6	P 6 credit points of Intermediate Mathematics N MATH3005	Semester 1
MATH 3067	Information and Coding Theory	6	P 12 credit points of Intermediate Mathematics N MATH3007, MATH3010	Semester 2
MATH 3076	Mathematical Computing	6	P 12 credit points of Intermediate Mathematics and one of MATH(1001 or 1003 or 1901 or 1903 or 1906 or 1907) N MATH 3976, MATH3016, MATH3916	Semester 1
MATH 3976	Mathematical Computing (Advanced)	6	P 12 credit points of Intermediate Mathematics and one of MATH(1903 or 1907) or Credit in MATH 1003 N MATH 3076, MATH 3016, MATH3916	Semester 1
MATH 3062	Algebra and Number Theory	6	P 12 credit points of Intermediate Mathematics N MATH3962, MATH3902, MATH3002, MATH3009 NB: Students are advised to take MATH(2068 or 2968) before attempting this unit.	Semester 2
MATH 3962	Rings, Fields and Galois Theory (Adv)	6	AMATH2961 P 12 credit points of Intermediate Mathematics N MATH3062, MATH3902, MATH3002 NB: Students are advised to take MATH2968 before attempting this unit.	Semester 1
MULT 3306	Multimedia Computing and Processing	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not be counted with MULT(3019 or 3919) or MULT(3004 or 3904) or MULT3606 or COMP(3004 or 3904).	Semester 1
MULT 3606	Multimedia Computing & Processing (Adv)	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a COMP or MULT or SOFT unit at 2000-level or above. N MULT(3019 or 3919 or 3004 or 3904 or 3306) or COMP(3004 or 3904)	Semester 1
MULT 3307	Interactive Multimedia Systems	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not be counted with SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2

Unit	*of*	*Study*	*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
MULT **3607**	Interactive Multimedia Systems (Adv)		6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a MULT or SOFT or INFO or COMP unit at 2000-level or above. N May not be counted with SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3307.	Semester 2
NETS **3303**	Network Protocols & Programming		6	P (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)). N May not be counted with NETS(3007 or 3907), COMP(3007 or3907) or NETS3603.	Semester 1
NETS **3603**	Network Protocols & Programming (Adv)		6	P (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. N May not be counted with NETS(3007 or 3907), COMP(3007 or3907) or NETS3303.	Semester 1
NETS **3305**	Computer and Network Security		6	P (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). NNETS(3016 or 3916),NETS3605 orELEC(5610 or 5616)	Semester 1
NETS **3605**	Computer and Network Security (Advanced)		6	P (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. NNETS(3016or3916),NETS3305 or ELEC(5610 or 5616)	Semester 1
NETS **3304**	Operating System Internals		6	P (ELECl601 orNETS(2008or2908)orCOMP(2001 or 2901) orELEC2601) and(SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not counted with NETS(3009 or 3909 or 3604), COMP(3009 or 3909). NB: Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enrol in this unit.	Semester 2
NETS 3604	Operating Systems Internals (Advanced)		6	P (ELECl601 orNETS(2008or2908)orCOMP(2001 or 2901) orELEC2601) and(SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. N May not counted with NETS(3009 or 3909 or 3304), COMP(3009 or 3909) NB: Students who were not able to do ELECl601, but have the remaining prerequisites, are encouraged to apply for special permission to enroll in this unit.	Semester 2
SOFT 3300	Software Development Project		6	P INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table Ill(iv) or III(v) of the BIT regulations). N SOFT(3600 or 3200 or 3700)	Semester 1, Semester 2
SOFT 3600	Software Development Project (Advanced)		6	P (INF02110 or INFO 2810 or INFO2000 or INFO2900) and (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2904 or COMP2004 or COMP2904), and 12 crpts of 3000-level IT-related units (from Table Ill(iv) or III(v) of the BIT regulations), and Distinction in any 2000-level or above IT-related unit. N May not be counted together with any of: SOFT (3300 or 3200 or 3700)	Semester 1, Semester 2
SOFT 3301	Software Construction 2		6	P SOFT(2130 or 2830 or 2004 or 2904) or COMP (2004 or COMP2904) N May not be counted with SOFT(3601, 3104, 3804) or COMP(3008 or COMP3908)	Semester 1
SOFT 3601	Software Construction 2 (Advanced)		6	P (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2004 or COMP2004 or COMP2904), and Distinction in any 2000-level or above SOFT or INFO unit. N May not be counted with SOFT3301, SOFT3104, SOFT3804, COMP3008 or COMP3908.	Semester 1
SOFT 3302	Software Quality Assurance		6	P (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))). N May not be counted with SOFT(3602 or 3103 or 3803)	Semester 2
SOFT 3602	Software Quality Assurance (Adv)		6	P (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))), and Distinction in any 2000-level or above SOFT or INFO unit. N May not be counted with SOFT(3302 or 3103 or 3803) or, COMP(3008 or COMP3908)	Semester 2
STAT 3011	Stochastic Processes and Time Series		6	P STAT (2011 or 2911 or 2001 or 2901) and MATH (1003 or 1903 or 1907). N STAT3911, STAT3003, STAT3903, STAT3005, STAT3905.	Semester 1
STAT 3911	Stochastic Processes and Time Series Adv		6	P (STAT2911 or credit in STAT2011) and MATH(1003 or 1903 or 1907). N STAT3011, STAT3003, STAT3903, STAT3005, STAT3905.	Semester 1
STAT 3012	Applied Linear Methods		6	P STAT(2012 or 2912 or 2004) and MATH(1002 or 1902). N STAT3912, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1
STAT 3912	Applied Linear Methods Advanced		6	P (STAT2912 or Credit in STAT2004 or Credit in STAT2012) and MATH(2061 or 2961 or 1902). N STAT3012, STAT3002, STAT3902, STAT3004, STAT3904.	Semester 1
STAT 3013	Statistical Inference		6	P STAT(2012 or 2912 or 2003 or 2903). N STAT3913, STAT3001, STAT3901.	Semester 2
STAT 3913	Statistical Inference Advanced		6	P STAT(2912 or 2903). N STAT3013, STAT3001, STAT3901.	Semester 2
STAT 3014	Applied Statistics		6	A STAT(3012 or 3912). P STAT(2012 or 2912 or 2004). N STAT3914, STAT3002, STAT3902, STAT3006	Semester 2
STAT 3914	Applied Statistics Advanced		6	A STAT3912. P STAT2912 or credit or better in (STAT2004 or STAT2012). N STAT3014, STAT3002, STAT3902, STAT3006, STAT3907.	Semester 2

Honours units of study

COMP 4045	Computational Geometry		6	A Data structures, analysis of algorithms P Credit average in 24 credit points of 3000-level study	Semester 1
COMP 4046	Statistical Natural Language Processing		6	A Concepts of linguistics, elementary statistics, AI techniques P Credit average in 24 credit points of 3000-level study	Semester 1
COMP 4048	Information Visualisation		6	A Discrete mathematics P Credit average in 24 credit points of 3000-level study	Semester 2
COMP 5318	Knowledge, Discovery and Data Mining		6	A COMP513 8 Relational Database Management Systems.	Semester 1, Semester 2

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
COMP 5338	Advanced Data Models	6	**A** COMP5138 Relational Database Management Systems N COMP5306	Semester 1, Semester 2
COMP 5347	e-Commerce Technology	6	A COMP5028 Object Oriented Analysis and Design	Semester 1, Semester 2
COMP 5348	Enterprise Scale Software Development	6	A COMP5028 Object Oriented Analysis and Design and COMP5148 Quality Software Development in Practice	Semester 1
COMP 5416	Advanced Network Technologies	6	A COMP5116 Internet Protocols and COMP5126 Distributed Systems Programming	Semester 2, Semester 1
COMP 5424	Information Technology in Biomedicine	6		Semester 1
COMP 5425	Multimedia Storage, Retrieval & Delivery	6	A COMP 5122 Multimedia Human Computer Interaction	Semester 1
COMP 5426	Network Based High Performance Computing	6	A COMP5126 Distributed Systems Programming	Semester 1
EBUS 4001	e-Business Engineering	6	A EBUS3002E-Commerce Website Programming or EBUS3004 E-Business Programming. NEBUS5001 E-Commerce Application Programming.	Semester 1
EBUS 5003	e-Commerce Systems	6	A EBUS4001 E-Business Engineering or EBUS5001 E-Commerce Application Programming. N EBUS5002 E-Commerce Systems.	Semester 2
ELEC 4505	Digital Communication Systems	6	A ELEC3505 Communications or ELEC3503 Introduction to Digital Communications. N ELEC4502 Digital Communication Systems.	Semester 1
ELEC 4605	Computer Engineering	6	A (ELEC2601 Microprocessor Systems or ELEC3607 Embedded Computing) and (ELEC2602 Digital System Design or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design). N ELEC4601 Computer Design.	Semester 1
ELEC 4706	Project Management	6	**N** ELEC4701 Proj ect Management.	Semester 1
ELEC 5303	Computer Control System Design	6	**N** ELEC4301 Computer Controlled System Design. NB: Department permission required for enrolment.	Semester 1
ELEC 5402	Digital Integrated Circuit Design	6	A (ELEC3401 Electronic Devices and Circuits or ELEC3404 Electronic Circuit Design), and (ELEC2601 Microcomputer Systems or ELEC3607 Embedded Computing). N ELEC4402 Integrated Circuit Design.	Semester 1
ELEC 5403	Radio Frequency Engineering	6	A ELEC3401 Electronic Devices and Circuits or ELEC3404 Electronic Circuit Design. N ELEC5521 Radio Frequency Engineering.	Semester 1
ELEC 5507	Error Control Coding	6	**A** ELEC3503 Introduction to Digital Communications or ELEC3505 Communications. N ELEC4503 Error Control Coding.	Semester 1
ELEC 5508	Wireless Engineering	6	A (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3504 Data Communications and the Internet or ELEC3506 Data Communications and the Internet or NETS2150 Fundamentals of Networking) N ELEC5504 Cellular Radio Engineering, ELEC4504 Wireless Networks.	Semester 2
ELEC 5509	Advanced Communication Networks	6	A ELEC3504 Data Communications and the Internet or ELEC3506 Data Communications and the Internet or NETS3007 Network Protocols. N ELEC5501 Advanced Communication Networks.	Semester 1
ELEC 5510	Satellite Communication Systems	6	**A** ELEC3505 Communications (or ELEC3503 Introduction to Digital Communications) and ELEC4505 Digital Communication Systems (or ELEC4502 Digital Communication Systems). N ELEC5502 Satellite Communications Systems.	Semester 2
ELEC 5511	Optical Communication Systems	6	A (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3402 Communications Electronics or ELEC3405 Communications Electronics and Photonics). N ELEC5503 Optical Communication Systems.	Semester 1
ELEC 5512	Optical Networks	6	A ELEC3503 Introduction to Digital Communications or ELEC3505 Communications. N ELEC5506 Optical Networks.	Semester 2
ELEC 5513	Network Management and Queuing Theory	6	A ELEC3506 Data Communications and the Internet (or ELEC3504 Data Communications and the Internet) and ELEC3505 Communications (or ELEC3503 Introduction to Digital Communications).	Semester 2
ELEC 5613	Image Processing and Computer Vision	6	A SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) or ELEC2602 Digital System Design (or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design) or ELEC3603 Introduction to Computing Systems. N ELEC4302 Image Processing and Computer Vision.	Semester 1
ELEC 5614	Real Time Computing	6	A SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) and ELEC3607 Embedded Computing (or ELEC2601 Microprocessor Systems). N ELEC4602 Real Time Computing.	Semester 2
ELEC 5615	Advanced Computer Engineering	6	A ELEC4605 Computer Engineering or ELEC4601 Computer Design. N ELEC5611 Advanced Computer Engineering. NB: Department permission required for enrolment.	Semester 2
ELEC 5616	Computer and Network Security	6	A ELEC3607 Embedded Computing (or ELEC2601 Microprocesor Systems) or ELEC3506 Data Communications and the Internet (or ELEC3504 Data Communications and the Internet) or EBUS3004 E-Business Programming (or EBUS3002 E-Commerce Website Programming). N ELEC5611 Computer and Network Security, NETS3016 Computer and Network Security, NETS3916 Computer and Network Security (Adv).	Semester 1
INFO 4010	IT Advanced Topic A	6	P Permission of Head of School NB: Department permission required for enrolment.	Semester 1
INFO 4011	IT Advanced Topic B	6	**P** Permission of Head of School NB: Department permission required for enrolment.	Semester 2
INFO 4990	IT Research Methods	6	A Elementary statistics NB: Department permission required for enrolment.	Semester 1, Semester 2

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
ISYS 4050	Knowledge Management Systems	6	A Information systems concepts, database concepts P Credit average in 24 credit points of 3000-level study	Semester 1
NETS 4047	Pervasive Computing	6	A Networking concepts, operating system concepts, programming expertise P Credit average in 24 credit points of 3000-level study	Semester 2

Table III(v) Senior and Honours Projects

The unit of study INFO 3600 may not be taken concurrently with SOFT (3200 or 3300 or 3600 or 3700) or ISYS (3207 or 3400).				
INFO 3600	Major Development Project	12	C 36 crpts from Table Ill(iv) and/or Table III(v) of the BIT regulations N SOFT3200, SOFT3300, SOFT3600, SOFT3700, ISYS3207, ISYS3400 NB: Only available to students in BIT	Semester 1, Semester 2
INFO 4991	IT Research Thesis A	6	C INFO4990 and INF04992	Semester 1, Semester 2
INFO 4992	IT Research Thesis B	12	C INFO4990 and INF04991	Semester 1, Semester 2
INFO 4999	Computer Science Honours Result	0	P Permission of the Head of Department NB: Department permission required for enrolment.	Semester 1, Semester 2
INFS 3080	Business Information Systems Project	6	P Department permission and at least 48 credit points NB: Department permission required for enrolment.	Semester 1, Semester 2
ISYS 3400	Information Systems Project	6	P (INFO3402 or ISYS3012) and (ISYS (3401 or 3015) or ARIN2000). N May not be counted with ISYS3207	Semester 2
SOFT 3300	Software Development Project	6	P INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table Ill(iv) or III(v) of the BIT regulations). N SOFT(3600or3200or3700)	Semester 1, Semester 2
SOFT 3600	Software Development Project (Advanced)	6	P (INF02110 or INFO 2810 or INFO2000 or INFO2900) and (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2904 or COMP2004 or COMP2904), and 12 crpts of 3000-level IT-related units (from Table Ill(iv) or III(v) of the BIT regulations), and Distinction in any 2000-level or above IT-related unit. N May not be counted together with any of: SOFT (3300 or 3200 or 3700)	Semester 1, Semester 2

Table IMA: Bachelor of Information Technology Majors

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
The unit of study INFO 3600 (offered prior to 2006) may be substituted for SOFT 3200 and/or ISYS 3207 in all majors for BIT students only.				
(i) Major in Principles of Computer Science				
Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents				
Core Junior units of study				
MATH 1005	Statistics	3	A HSC Mathematics N MATH (1905 or 1015) or ECMT Junior units of study or STAT (1021 or 1022)	Semester 2, Summer
SOFT 1001	Software Development 1	6	A HSC Mathematics Extension 1 N SOFT 1901, COMP (1001 or 1901), DECO2011	Semester 1, Semester 2
SOFT 1002	Software Development 2	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 N SOFT 1902 or COMP (1002 or 1902) NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 1, Semester 2, Summer
Core Intermediate units of study				
COMP 2160	Data Structures	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP(2111 or 2811 or 2002 or 2902 or 2860)	Semester 1
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS 1003 or INFO 1000 level P (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. N INFO (2000 or 2810 or 2900)	Summer, Semester 1
MATH 2069	Discrete Mathematics and Graph Theory	6	P 6 credit points of Junior level Mathematics N MATH (2011 or 2009 or 2969)	Semester 1
SOFT 2130	Software Construction 1	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). NB: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.	Semester 2, Summer
Core Senior units of study				
COMP 3308	Introduction to Artificial Intelligence	6	A Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO 1903 or SOFT 1002 P 18 crpts of 2000-level units. N May not be counted with COMP(3002 or 3902 or 3608).	Semester 1
COMP 3309	Algorithms	6	A Discrete mathematics. P COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902). N May not be counted COMP(3111 or 3811), COMP(3001 or 3901) or COMP3609.	Semester 1
COMP 3310	Theory of Computation	6	**P** COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902). N COMP (2003 or 2903 or 3610)	Semester 2
Elective Senior units of study				
Students are required to complete 12 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.				
INFO 3404	Database Systems 2	6	**P** INFO(2120 or 2820 or 2005 or 2905). N May not be counted with INFO (3005 or 3504 or 3905) or COMP (3005 or 3905).	Semester 2
MATH 3065	Logic and Foundations	6	**P** 6 credit points of Intermediate Mathematics N MATH3005	Semester 1
MATH 3067	Information and Coding Theory	6	**P** 12 credit points of Intermediate Mathematics N MATH3007, MATH3010	Semester 2
MULT 3306	Multimedia Computing and Processing	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not be counted with MULT(3019 or 3919) or MULT(3004 or 3904) or MULT3606 or COMP(3004 or 3904).	Semester 1
MULT 3307	Interactive Multimedia Systems	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not be counted with SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2
SOFT 3300	Software Development Project	6	PINFO(2110or2810or2000or2900)andSOFT(2130or2830or2004or2904)orCOMP(2004or2904), and 12 crpts of 3000-level IT-related units (from Table Ill(iv) or III(v) of the BIT regulations). N SOFT(3600 or 3200 or 3700)	Semester 1, Semester 2
Elective Honours units of study				
COMP 5318	Knowledge, Discovery and Data Mining	6	A COMP5138 Relational Database Management Systems.	Semester 1, Semester 2
COMP 4045	Computational Geometry	6	A Data structures, analysis of algorithms P Credit average in 24 credit points of 3000-level study	Semester 1
COMP 4046	Statistical Natural Language Processing	6	A Concepts of linguistics, elementary statistics, AI techniques P Credit average in 24 credit points of 3000-level study	Semester 1
COMP 4048	Information Visualisation	6	A Discrete mathematics P Credit average in 24 credit points of 3000-level study	Semester 2

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
(ii) Major in Information Systems				
Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents.				
Core Junior units of study				
ARIN 1000	History and Theory of Informatics	6	C ISYS 1003 or INFO 1000 or INFO 1003 N Available to BA Informatics, BCST and BIT students only	Semester 1
INFO 1003	Foundations of Information Technology	6	A Basic computer operations N INFO 1000, INFS 1000, ISYS 1003, INFO 1903.	Semester 1, Semester 2
MATH 1005	Statistics	3	A HSC Mathematics N MATH (1905 or 1015) or ECMT Junior units of study or STAT (1021 or 1022)	Semester 2, Summer
Core Intermediate units of study				
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS 1003 or INFO 1000 level P (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. N INFO (2000 or 2810 or 2900)	Summer, Semester 1
INFO 2120	Database Systems 1	6	P INFO(1003 or 1903 or 1000) or ISYS 1003 or INFS 1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC) or DECO2011 N INFO (2005 or 2820 or 2905).	Semester 2
ISYS 2140	Information Systems	6	A Understanding of the roles and functions of information technology tools for document processing, modelling, database management etc. Experience in the use of these tools to solve practical problems and to present the results effectively. Awareness of the main concepts of programming and of a program running in a computer (a process) P INFO(1003 or 1903 or 1000) or ISYS 1003 or INFS 1000. N ISYS (2006 or 2007)	Semester 1
Core Senior units of study				
INFO 3402	Management of IT Projects and Systems	6	P INFO (2000 or 2110 or 2810 or 2900). N May not be counted with ISYS (3000 or 3012).	Semester 1
ISYS 3401	Analytical Methods & Information Systems	6	P ISYS (2140 or 2006) and INFO (2000 or 2110 or 2810 or 2900) and (MATH(1005 or 1015 or 1905) or STAT 1021) and (ARIN 1000 or ENGL 1050 or ENGL 1005 or LNGS1001 orLNGS1002 orLNGS1005 or any HPSC unit) N May not be counted with ISYS3015	Semester 1
ISYS 3400	Information Systems Project	6	P (INFO3402 or ISYS3012) and (ISYS (3401 or 3015) or ARIN2000). N May not be counted with ISYS3207	Semester 2
Elective Senior units of study				
Students are required to complete 6 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.				
INFO 3404	Database Systems 2	6	P INFO(2120 or 2820 or 2005 or 2905). N May not be counted with INFO (3005 or 3504 or 3905) or COMP (3005 or 3905).	Semester 2
ISYS 3403	IT Systems in Arts and Humanities	6	P INFO (2000 or 2110 or 2810 or 2900) and INFO (2005 or 2120 or 2820 or 2905). N May not be counted with ISYS3113 or EBUS(3002 or 3004).	Semester 1
Elective Honours units of study				
ISYS 4050	Knowledge Management Systems	6	A Information systems concepts, database concepts P Credit average in 24 credit points of 3000-level study	Semester 1
COMP 5338	Advanced Data Models	6	A COMP513 8 Relational Database Management Systems N COMP5306	Semester 1, Semester 2
(iii) Major in Multimedia Technology				
Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents.				
Core Junior units of study				
MATH 1001	Differential Calculus	3	A HSC Mathematics Extension 1 N MATH 1011 or 1901 or 1906 or 1111	Semester 1, Summer
MATH 1002	Linear Algebra	3	A HSC Mathematics Extension 1 N MATH 1902 or 1012 or 1014	Semester 1, Summer
MATH 1003	Integral Calculus and Modelling	3	A HSC Mathematics Extension 2 or MATH 1001 or MATH 1111 N MATH 1013 or 1903 or 1907	Semester 2, Summer
SOFT 1001	Software Development 1	6	A HSC Mathematics Extension 1 N SOFT 1901, COMP (1001 or 1901), DECO2011	Semester 1, Semester 2
SOFT 1002	Software Development 2	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 N SOFT 1902 or COMP (1002 or 1902) NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 1, Semester 2, Summer
Core Intermediate units of study				
COMP 2160	Data Structures	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP(2111 or 2811 or 2002 or 2902 or 2860)	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO 1000 level P (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. N INFO (2000 or 2810 or 2900)	Summer, Semester 1
SOFT 2130	Software Construction 1	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). NB: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.	Semester 2, Summer

Core Senior units of study

MULT 3306	Multimedia Computing and Processing	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not be counted with MULT(3019 or 3919) or MULT(3004 or 3904) or MULT3606 or COMP(3004 or 3904).	Semester 1
MULT 3307	Interactive Multimedia Systems	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not be counted with SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2

Elective Senior units of study

Students are required to complete 12 credit points from the elective units or other mutually exclusive units such as their Advanced equivalents.

COMP 3309	Algorithms	6	A Discrete mathematics. P COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902). N May not be counted COMP(3111 or 3811), COMP(3001 or 3901) or COMP3609.	Semester 1
MATH 3067	Information and Coding Theory	6	**P** 12 credit points of Intermediate Mathematics N MATH3007, MATH3010	Semester 2
SOFT 3300	Software Development Project	6	PINFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table Ill(iv) or III(v) of the BIT regulations). N SOFT(3600 or 3200 or 3700)	Semester 1, Semester 2

Elective Honours units of study

COMP 4048	Information Visualisation	6	A Discrete mathematics P Credit average in 24 credit points of 3000-level study	Semester 2
ELEC 5613	Image Processing and Computer Vision	6	A SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) or ELEC2602 Digital System Design (or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design) or ELEC3603 Introduction to Computing Systems. N ELEC4302 Image Processing and Computer Vision.	Semester 1
MULT 4043	Multimedia Storage, Retrieval & Delivery		NB: * * * No info available for 2006. ***	

(iv) Major in Networks & Systems

Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents.

Core Junior units of study

ELEC 1601	Professional Computer Engineering	6	A HSC Mathematics extension 1. N NETS2008 Computer System Organisation, NETS2908 Computer System Organisation (Adv), COMP2001 Computer Systems, COMP2901 Computer Systems (Adv).	Semester 1, Summer
SOFT 1001	Software Development 1	6	A HSC Mathematics Extension 1 N SOFT 1901, COMP (1001 or 1901), DECO2011	Semester 1, Semester 2
SOFT 1002	Software Development 2	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 N SOFT 1902 or COMP (1002 or 1902) NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 1, Semester 2, Summer

Core Intermediate units of study

INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO 1000 level P (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. N INFO (2000 or 2810 or 2900)	Summer, Semester 1
NETS 2150	Fundamentals of Networking	6	A Basic computer organization P SOFT(1002 or 1902) or COMP(1001 or 1901) or DECO2011 N NETS (2009 or 2909 or 2850), ELEC (3506 or 3504)	Semester 1
SOFT 2130	Software Construction 1	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). NB: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.	Semester 2, Summer

Core Senior units of study

NETS 3303	Network Protocols & Programming	6	**P** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)). N May not be counted with NETS(3007 or 3907), COMP(3007 or3907) or NETS3603.	Semester 1
NETS 3304	Operating System Internals	6	P(ELEC1601 orNETS(2008or2908)orCOMP(2001 or 2901) orELEC2601) and(SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not counted with NETS(3009 or 3909 or 3604), COMP(3009 or 3909). NB: Students who were not able to do ELEC 1601, but have the remaining prerequisites, are encouraged to apply for special permission to enrol in this unit.	Semester 2
NETS 3305	Computer and Network Security	6	P (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N NETS(3016 or 3916), NETS3605 or ELEC(5610 or 5616)	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
Elective Senior units of study				
Students are required to complete 6 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.				
SOFT 3300	Software Development Project	6	P INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table Ill(iv) or III(v) of the BIT regulations). N SOFT(3600 or 3200 or 3700)	Semester 1, Semester 2
ELEC 3505	Communications	6	A ELEC2301 Signals and Systems or ELEC2302 Signals and Systems. N ELEC3503 Introduction to Digital Communications.	Semester 1
ELEC 3607	Embedded Computing	6	A ELEC 1101 Foundations of Computer Systems or ELEC2602 Digital System Design. N ELEC2601 Microcomputer Systems.	Semester 2
Elective Honours units of study				
ELEC 4505	Digital Communication Systems	6	A ELEC3505 Communications or ELEC3503 Introduction to Digital Communications. N ELEC4502 Digital Communication Systems.	Semester 1
ELEC 4605	Computer Engineering	6	A (ELEC2601 Microprocessor Systems or ELEC3607 Embedded Computing) and (ELEC2602 Digital System Design or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design). N ELEC4601 Computer Design.	Semester 1
ELEC 5507	Error Control Coding	6	A ELEC3503 Introduction to Digital Communications or ELEC3505 Communications. N ELEC4503 Error Control Coding.	Semester 1
ELEC 5508	Wireless Engineering	6	A (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3504 Data Communications and the Internet or ELEC3506 Data Communications and the Internet or NETS2150 Fundamentals of Networking) N ELEC5504 Cellular Radio Engineering, ELEC4504 Wireless Networks.	Semester 2
ELEC 5509	Advanced Communication Networks	6	A ELEC3504 Data Communications and the Internet or ELEC3506 Data Communications and the Internet or NETS3007 Network Protocols. N ELEC5501 Advanced Communication Networks.	Semester 1
ELEC 5510	Satellite Communication Systems	6	A ELEC3505 Communications (or ELEC3503 Introduction to Digital Communications) and ELEC4505 Digital Communication Systems (or ELEC4502 Digital Communication Systems). N ELEC5502 Satellite Communications Systems.	Semester 2
ELEC 5511	Optical Communication Systems	6	A (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3402 Communications Electronics or ELEC3405 Communications Electronics and Photonics). N ELEC5503 Optical Communication Systems.	Semester 1
ELEC 5512	Optical Networks	6	A ELEC3503 Introduction to Digital Communications or ELEC3505 Communications. N ELEC5506 Optical Networks.	Semester 2
NETS 4040	Advanced Networking Technologies		NB: *** No info available for 2006. ***	
NETS 4041	Network-Based High Performance Computing		NB: *** No info available for 2006. ***	
NETS 4047	Pervasive Computing	6	A Networking concepts, operating system concepts, programming expertise P Credit average in 24 credit points of 3000-level study	Semester 2
(v) Major in Software Development				
Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents.				
Core Junior units of study				
SOFT 1001	Software Development 1	6	A HSC Mathematics Extension 1 N SOFT 1901, COMP (1001 or 1901), DECO2011	Semester 1, Semester 2
SOFT 1002	Software Development 2	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 N SOFT 1902 or COMP (1002 or 1902) NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 1, Semester 2, Summer
MATH 1005	Statistics	3	A HSC Mathematics N MATH (1905 or 1015) or ECMT Junior units of study or STAT (1021 or 1022)	Semester 2, Summer
Core Intermediate units of study				
COMP 2160	Data Structures	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP(2111 or 2811 or 2002 or 2902 or 2860)	Semester 1
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO 1000 level P (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. N INFO (2000 or 2810 or 2900)	Summer, Semester 1
INFO 2120	Database Systems 1	6	P INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC) or DECO2011 N INFO (2005 or 2820 or 2905).	Semester 2
SOFT 2130	Software Construction 1	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). NB: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.	Semester 2, Summer
Core Senior units of study				
SOFT 3301	Software Construction 2	6	P SOFT(2130 or 2830 or 2004 or 2904) or COMP (2004 or COMP2904) N May not be counted with SOFT(3601, 3104, 3804) or COMP(3008 or COMP3908)	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
SOFT 3302	Software Quality Assurance	6	P (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))). N May not be counted with SOFT(3602 or 3103 or 3803)	Semester 2
SOFT 3300	Software Development Project	6	PINFO(2110or2810or2000or2900)andSOFT(2130or2830or2004or2904)orCOMP(2004or2904), and 12 crpts of 3000-level IT-related units (from Table Ill(iv) or III(v) of the BIT regulations). N SOFT(3600 or 3200 or 3700)	Semester 1, Semester 2

Elective Senior units of study

Students are required to complete 6 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.

EBUS 3004	e-Business Programming	6	A EBUS3001 Introduction to E-Commerce Systems or EBUS3003 E-Business System Design. N EBUS3002 E-Commerce Website Programming.	Semester 2
ELEC 3605	Engineering Software Requirements	6	A SOFT2004 Software Development Methods 1 or SOFT2130 Software Construction. N ELEC4604 Engineering Software Requirements.	Semester 1
ELEC 3606	Software Project Management	6	A SOFT2004 Software Development Methods 1 or SOFT2130 Software Construction. N ELEC4704 Software Project Management.	Semester 2
INFO 3402	Management of IT Projects and Systems	6	**P** INFO (2000 or 2110 or 2810 or 2900). N May not be counted with ISYS (3000 or 3012).	Semester 1
MULT 3307	Interactive Multimedia Systems	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not be counted with SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2
NETS 3305	Computer and Network Security	6	P (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N NETS(3016 or 3916), NETS3605 or ELEC(5610 or 5616)	Semester 1

Elective Honours units of study

EBUS 4001	e-Business Engineering	6	A EBUS3002 E-Commerce Website Programming or EBUS3004 E-Business Programming. NEBUS5001 E-Commerce Application Programming.	Semester 1
ELEC 5614	Real Time Computing	6	A SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) and ELEC3607 Embedded Computing (or ELEC2601 Microprocessor Systems). N ELEC4602 Real Time Computing.	Semester 2
SOFT 4042	Enterprise-Scale Software		NB: ***^{N} No info available for 2006. ***	

(vi) Major in Digital Design

Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents.

Core Junior units of study

ELEC 1601	Professional Computer Engineering	6	A HSC Mathematics extension 1. N NETS2008 Computer System Organisation, NETS2908 Computer System Organisation (Adv), COMP2001 Computer Systems, COMP2901 Computer Systems (Adv).	Semester 1, Summer
SOFT 1001	Software Development 1	6	A HSC Mathematics Extension 1 N SOFT 1901, COMP (1001 or 1901), DECO2011	Semester 1, Semester 2
SOFT 1002	Software Development 2	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 N SOFT 1902 or COMP (1002 or 1902) NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 1, Semester 2, Summer

Core Intermediate units of study

ELEC 2602	Digital System Design	6	**A** ELEC 1101 Foundations of Computer Systems or ELEC 1601 Professional Computer Engineering. N ELEC3601 Digital Systems Design, ELEC3608 Digital Systems Design.	Semester 2
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS 1003 or INFO 1000 level P (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. N INFO (2000 or 2810 or 2900)	Summer, Semester 1
SOFT 2130	Software Construction 1	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). NB: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.	Semester 2, Summer

Core Senior units of study

ELEC 3607	Embedded Computing	6	**A** ELEC 1101 Foundations of Computer Systems or ELEC2602 Digital System Design. N ELEC2601 Microcomputer Systems.	Semester 2

Core Honours units of study

ELEC 4605	Computer Engineering	6	A (ELEC2601 Microprocessor Systems or ELEC3607 Embedded Computing) and (ELEC2602 Digital System Design or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design). N ELEC4601 Computer Design.	Semester 1

Elective Senior units of study

Students are required to complete 12 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.

ELEC 3305	Digital Signal Processing	6	A ELEC2301 Signals & Systems or ELEC 2302 Signals & Systems. N ELEC 3303 Digital Signal Processing.	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
ELEC 3404	Electronic Circuit Design	6	A ELEC2401 Introductory Electronics or ELEC2104 Electronic Devices and Basic Circuits. NELEC3401 Electronic Devices and Circuits.	Semester 1
ELEC 3605	Engineering Software Requirements	6	A SOFT2004 Software Development Methods 1 or SOFT2130 Software Construction. N ELEC4604 Engineering Software Requirements.	Semester 1
NETS 3304	Operating System Internals	6	P(ELEC1601 orNETS(2008or2908)orCOMP(2001 or 2901) orELEC2601) and(SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not counted with NETS(3009 or 3909 or 3604), COMP(3009 or 3909). NB: Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enrol in this unit.	Semester 2

Elective Honours units of study

ELEC 5402	Digital Integrated Circuit Design	6	A (ELEC3401 Electronic Devices and Circuits or ELEC3404 Electronic Circuit Design), and (ELEC2601 Microcomputer Systems or ELEC3607 Embedded Computing). N ELEC4402 Integrated Circuit Design.	Semester 1
ELEC 5614	Real Time Computing	6	A SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) and ELEC3607 Embedded Computing (or ELEC2601 Microprocessor Systems). N ELEC4602 Real Time Computing.	Semester 2
ELEC 5613	Image Processing and Computer Vision	6	A SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) or ELEC2602 Digital System Design (or ELEC3601 Digital Systems Design or ELEC3608 Digital Systems Design) or ELEC3603 Introduction to Computing Systems. N ELEC4302 Image Processing and Computer Vision.	Semester 1
ELEC 5615	Advanced Computer Engineering	6	A ELEC4605 Computer Engineering or ELEC4601 Computer Design. N ELEC5611 Advanced Computer Engineering. NB: Department permission required for enrolment.	Semester 2
ELEC 5616	Computer and Network Security	6	**A** ELEC3607 Embedded Computing (or ELEC2601 Microprocesor Systems) or ELEC3506 Data Communications and the Internet (or ELEC3504 Data Communications and the Internet) or EBUS3004 E-Business Programming (or EBUS3002 E-Commerce Website Programming). N ELEC5611 Computer and Network Security, NETS3016 Computer and Network Security, NETS3916 Computer and Network Security (Adv).	Semester 1

(vii) Major in Computational Science

Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents.

Core Senior units of study

MATH 3076	Mathematical Computing	6	**P** 12 credit points of Intermediate Mathematics and one of MATH(1001 or 1003 or 1901 or 1903 or 1906 or 1907) N MATH 3976, MATH3016, MATH3916	Semester 1
COSC 3011	Scientific Computing	6	A Programming experience in MATLAB P 12 credit points chosen from Junior Mathematics and Statistics, 12 creditpoints of Intermediate units in Science subject areas. N COSC3911, COSC 3001, COSC 3901, PHYS3301,PHYS3901	Semester 1
COSC 3012	Parallel Computing & Visualisation	6	A Programming experience in C and MATLAB or equivalent. P 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. N COSC3912, COSC 3002, COSC 3902, COSC3601, PHYS3303, PHYS3933	Semester 2

Elective Senior units of study

Students are required to complete 6 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.

BIOL 3027	Bioinformatics and Genomics	6	**P** 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units. For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. N BIOL3927 NB: This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.	Semester 1
BINF 3101	Bioinformatics Project	6	A 12 credit points from Junior units of study in Software Development (SOFT) and/or Computational Science (COSC) P SOFT (2130 or 2830 or 2004 or 2904) and 12 credit points from Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and Genetics and/or Pharmacology N COMP 3206, BINF3001	Semester 2
MATH 3063	Differential Equations & Biomaths	6	A MATH2061 P 12 credit points of Intermediate Mathematics N MATH3020, MATH3920, MATH3003, MATH3923, MATH3963	Semester 1
MATH 3078	PDEs and Waves	6	A MATH(2061/2961) and MATH(2065/2965) P 12 credit points of Intermediate Mathematics N MATH3978, MATH3018, MATH3921	Semester 2
MULT 3307	Interactive Multimedia Systems	6	**P** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not be counted with SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2
STAT 3011	Stochastic Processes and Time Series	6	P STAT (2011 or 2911 or 2001 or 2901) and MATH (1003 or 1903 or 1907). N STAT3911, STAT3003, STAT3903, STAT3005, STAT3905.	Semester 1
STAT 3012	Applied Linear Methods	6	**P** STAT(2012 or 2912 or 2004) and MATH(1002 or 1902). N STAT3912, STAT3002, STAT3902, STAT3004, STAT3904	Semester 1

(viii) Major in Language Technology^:

Students are required to complete all the core units, or other mutually exclusive units such as their Advanced equivalents. * Only available to BIT students.

Core Junior units of study

LNGS 1001	Structure of Language	6	**N** LNGS 1004, LNGS 1005	Semester 1
SOFT 1001	Software Development 1	6	A HSC Mathematics Extension 1 N SOFT 1901, COMP (1001 or 1901), DECO2011	Semester 1, Semester 2

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
SOFT 1002	Software Development 2	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 N SOFT 1902 or COMP (1002 or 1902) NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 1, Semester 2, Summer
MATH 1004	Discrete Mathematics	3	A HSC Mathematics Extension 1 N MATH 1904 or MATH2011	Semester 2, Summer
MATH 1005	Statistics	3	A HSC Mathematics N MATH (1905 or 1015) or ECMT Junior units of study or STAT (1021 or 1022)	Semester 2, Summer

Core Intermediate units of study

Students are advised that some Senior electives require additional Intermediate units as prerequisites.

COMP 2160	Data Structures	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP(2111 or 2811 or 2002 or 2902 or 2860)	Semester 1
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO 1000 level P (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. N INFO (2000 or 2810 or 2900)	Summer, Semester 1
LNGS 2601	Phonetics and Phonology	6	P LNGS 1001: Structure of Language or LNGS 1005: Structure of English or LNGS 1004 Languages of Australia N KRNS 2317 or KRNS 2318 or LNGS2001. NB: This unit is available as a designated 'Advanced' unit to students enrolled in the BA (Advanced) degree program.	Semester 1
LNGS 2602	Syntax	6	**P** LNGS 1001 or LNGS 1005 or LNGS 1004. N LNGS 2002. NB: This unit is available as a designated 'Advanced' unit to students enrolled in the BA (Advanced) degree program.	Semester 2
SOFT 2130	Software Construction 1	6	**P** SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830). NB: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.	Semester 2, Summer
STAT 2011	Statistical Models	6	P MATH (1001 or 1901 or 1906 or 1011) and [MATH (1005 or 1905 or 1015) or STAT1021] N STAT (2901 or 2001 or 2911)	Semester 1

Core Senior units of study

COMP 3308	Introduction to Artificial Intelligence	6	A Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO 1903 or SOFT 1002 P 18 crpts of 2000-level units. N May not be counted with COMP(3002 or 3902 or 3608).	Semester 1
LNGS 3601	Semantics and Pragmatics	6	**P** One of LNGS2601, LNGS2602, LNGS2603, LNGS2604 [or LNGS2001, LNGS2002, LNGS2003, LNGS2004]. N LNGS3026, LNGS3006 NB: Compulsory for Honours students; other students may select as an option. This unit is available as a designated 'Advanced' unit to students enrolled in the BA (Advanced) degree program.	Semester 1
SOFT 3301	Software Construction 2	6	P SOFT(2130 or 2830 or 2004 or 2904) or COMP (2004 or COMP2904) N May not be counted with SOFT(3601, 3104, 3804) or COMP(3008 or COMP3908)	Semester 1

Elective units of study

Students are required to complete 6 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.

COMP 3309	Algorithms	6	A Discrete mathematics. P COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902). N May not be counted COMP(3111 or 3811), COMP(3001 or 3901) or COMP3609.	Semester 1
COMP 4046	Statistical Natural Language Processing	6	A Concepts of linguistics, elementary statistics, AI techniques P Credit average in 24 credit points of 3000-level study	Semester 1
INFO 3404	Database Systems 2	6	P INFO(2120 or 2820 or 2005 or 2905). N May not be counted with INFO (3005 or 3504 or 3905) or COMP (3005 or 3905).	Semester 2
LNGS 2603	Functional Grammar and Discourse	6	P Two of ENGL1000, ENGL1050, LNGS1001, LNGS1002, LNGS1003, LNGS1004, LNGS1005, MECO1001 NLNGS2003	Semester 1
LNGS 2604	Discourse Analysis	6	PTwo of LNGS1001, LNGS1002, LNGS1003, LNGS1004, LNGS1005, ENGL 1050, MECO1001. Also oneofLNGS2602, LNGS2603 NLNGS2004,	Semester 2
MULT 3306	Multimedia Computing and Processing	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not be counted with MULT(3019 or 3919) or MULT(3004 or 3904) or MULT3606 or COMP(3004 or 3904).	Semester 1
MULT 3307	Interactive Multimedia Systems	6	P (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). N May not be counted with SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.	Semester 2
SOFT 3302	Software Quality Assurance	6	P (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))). N May not be counted with SOFT(3602 or 3103 or 3803)	Semester 2
STAT 3011	Stochastic Processes and Time Series	6	P STAT (2011 or 2911 or 2001 or 2901) and MATH (1003 or 1903 or 1907). N STAT3911, STAT3003, STAT3903, STAT3005, STAT3905.	Semester 1

Table IV: Bachelor of Medical Science

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
A. Junior units of study				
Candidates are required to enrol in and complete:				
(i)MBLGlOOl;				
(ii) 12 credit points of Junior units of study from the Science Subject Area of Chemistry;				
(iii) 12 credit points of Junior units of study from the Science Subject Area of Mathematics;				
(iv) 12 credit points of Junior units of study from the Science Subject Area of Physics or Computational Science;and				
(v) 6 credit points of Junior units of study from the Science Subject Area of Biology.				
B. Intermediate units of study				
Candidates are required to complete 48 credit points of Intermediate core units of study.				
BMED 2801	Cell Structure and Function	6	P 42 credit points of Junior Bachelor of Medical Science units of study N All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 1
BMED 2802	Molecular Basis of Medical Sciences	6	P 42 credit points of Junior Bachelor of Medical Science units of study N All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 1
BMED 2803	Cardiac, Respiratory and Renal Function	6	P 42 credit points of Junior Bachelor of Medical Science units of study N All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 1
BMED 2804	Digestion, Absorption and Metabolism	6	P 42 credit points of Junior Bachelor of Medical Science units of study N All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 2
BMED 2805	Hormones, Reproduction and Development	6	P 42 credit points of Junior Bachelor of Medical Science units of study N All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 2
BMED 2806	Sensory and Motor Functions	6	P 42 credit points of Junior Bachelor of Medical Science units of study N All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 1
BMED 2807	Microbes and Body Defences	6	P 42 credit points of Junior Bachelor of Medical Science units of study N All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 2
BMED 2808	Disease in Society	6	P 42 credit points of Junior Bachelor of Medical Science units of study N All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916)	Semester 2
C. Senior units of study				
Students may complete their Senior year by taking 48 credit points of Senior core units from the subject areas of Anatomy and Histology, Biology (Genetics) (ie. BIOL 3018/3918, 3025/3925, 3026/3926, 3027/3927), Biochemistry, Cell Pathology, Immunology, Infectious Diseases, Microbiology, Pharmacology and Physiology. The unit listed in the table below is available only to students enrolled in the Bachelor of Medical Science. Details of the other units available are listed in Table I. Candidates may elect to take 36 credit points of Senior core units and 12 credit points of elective units. The electives may be chosen from any units of study available in the university, and in which the candidate is permitted to enrol by the relevant Faculty or School.				
INFD 3012	Infectious Diseases	6	A Intermediate microbiology, immunology, molecular biology and genetics. P 42 cedit points of intermediate BMED units including BMED2807. NB: The completion of MICR3011 is strongly recommended prior to undertaking this course.	Semester 2
D. Honours units of study				
Where Honours units of study are designated A, B, C, D the units should be taken in that order, whether a student enrols full-time,, part-time or mid-year.				
Anatomy				
ANAT 4011	Anatomy Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
ANAT 4012	Anatomy Honours B	12	C ANAT 4011	Semester 1, Semester 2
ANAT 4013	Anatomy Honours C	12	C ANAT 4012	Semester 1, Semester 2
ANAT 4014	Anatomy Honours D	12	C ANAT 4013	Semester 1, Semester 2
Biochemistry				
BCHM 4011	Biochemistry Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
BCHM 4012	Biochemistry Honours B	12	C BCHM 4011	Semester 1, Semester 2
BCHM 4013	Biochemistry Honours C	12	C BCHM 4012	Semester 1, Semester 2
BCHM 4014	Biochemistry Honours D	12	C BCHM 4013	Semester 1, Semester 2
Biology (Genetics)				
BIOL 4011	Biology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
BIOL 4012	Biology Honours B	12	C BIOL 4011	Semester 1, Semester 2
BIOL 4013	Biology Honours C	12	C BIOL 4012	Semester 1, Semester 2
BIOL 4014	Biology Honours D	12	C BIOL 4013	Semester 1, Semester 2
Cell Pathology				
CPAT 4011	Cell Pathology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
CPAT 4012	Cell Pathology Honours B	12	C CPAT 4011	Semester 1, Semester 2
CPAT 4013	Cell Pathology Honours C	12	C CPAT 4012	Semester 1, Semester 2
CPAT 4014	Cell Pathology Honours D	12	C CPAT 4013	Semester 1, Semester 2
Histology and Embryology				
Students should enrol in Anatomy Honours				
Immunology				
BMED 4011	Immunology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
BMED 4012	Immunology Honours B	12	C BMED 4011	Semester 1, Semester 2
BMED 4013	Immunology Honours C	12	C BMED 4012	Semester 1, Semester 2
BMED 4014	Immunology Honours D	12	C BMED 4013	Semester 1, Semester 2
Infectious Diseases				
BMED 4021	Infectious Diseases Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
BMED 4022	Infectious Diseases Honours B	12	C BMED 4021	Semester 1, Semester 2
BMED 4023	Infectious Diseases Honours C	12	C BMED 4022	Semester 1, Semester 2
BMED 4024	Infectious Diseases Honours D	12	C BMED 4023	Semester 1, Semester 2
Microbiology				
MICR 4011	Microbiology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
MICR 4012	Microbiology Honours B	12	C MICR 4011	Semester 2, Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
MICR 4013	Microbiology Honours C	12	C MICR 4012	Semester 1, Semester 2
MICR 4014	Microbiology Honours D	12	C MICR 4013	Semester 1, Semester 2
Pharmacology				
PCOL 4011	Pharmacology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
PCOL 4012	Pharmacology Honours B	12	C PCOL 4011	Semester 1, Semester 2
PCOL 4013	Pharmacology Honours C	12	C PCOL 4012	Semester 1, Semester 2
PCOL 4014	Pharmacology Honours D	12	C PCOL 4013	Semester 1, Semester 2
Physiology				
PHSI 4011	Physiology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
PHSI 4012	Physiology Honours B	12	C PHSI 4011	Semester 1, Semester 2
PHSI 4013	Physiology Honours C	12	C PHSI 4012	Semester 1, Semester 2
PHSI 4014	Physiology Honours D	12	C PHSI 4013	Semester 1, Semester 2

Table VI: Honours Units of Study

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
Agricultural Chemistry Honours				
AGCH 4021	Agricultural Chemistry Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
AGCH 4022	Agricultural Chemistry Honours B	12	C AGCH 4021	Semester 2, Semester 1
AGCH 4023	Agricultural Chemistry Honours C	12	C AGCH 4022	Semester 2, Semester 1
AGCH 4024	Agricultural Chemistry Honours D	12	C AGCH 4023	Semester 2, Semester 1
Anatomy and Histology Honours				
ANAT 4011	Anatomy Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
ANAT 4012	Anatomy Honours B	12	C ANAT 4011	Semester 1, Semester 2
ANAT 4013	Anatomy Honours C	12	C ANAT 4012	Semester 1, Semester 2
ANAT 4014	Anatomy Honours D	12	C ANAT 4013	Semester 1, Semester 2
Biochemistry Honours				
BCHM 4011	Biochemistry Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
BCHM 4012	Biochemistry Honours B	12	C BCHM 4011	Semester 1, Semester 2
BCHM 4013	Biochemistry Honours C	12	C BCHM 4012	Semester 1, Semester 2
BCHM 4014	Biochemistry Honours D	12	C BCHM 4013	Semester 1, Semester 2
Biology Honours				
BIOL 4011	Biology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
BIOL 4012	Biology Honours B	12	C BIOL 4011	Semester 1, Semester 2
BIOL 4013	Biology Honours C	12	C BIOL 4012	Semester 1, Semester 2
BIOL 4014	Biology Honours D	12	C BIOL 4013	Semester 1, Semester 2
Chemistry Honours				
CHEM 4011	Chemistry Honours A	12	NB: Department permission required for enrolment.Department permission required for enrolment.	Semester 1, Semester 2
CHEM 4012	Chemistry Honours B	12	C CHEM 4011	Semester 1, Semester 2
CHEM 4013	Chemistry Honours C	12	C CHEM 4012	Semester 1, Semester 2

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
CHEM 4014	Chemistry Honours D	12	C CHEM 4013	Semester 1, Semester 2

Computational Science Honours

COSC 4001	Computational Science Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
COSC 4002	Computational Science Honours B	12	CCOSC4001	Semester 1, Semester 2
COSC 4003	Computational Science Honours C	12	C COSC4002	Semester 1, Semester 2
COSC 4004	Computational Science Honours D	12	C COSC4003	Semester 1, Semester 2

Computer Science Honours

COMP 4045	Computational Geometry	6	A Data structures, analysis of algorithms P Credit average in 24 credit points of 3000-level study	Semester 1
COMP 4046	Statistical Natural Language Processing	6	A Concepts of linguistics, elementary statistics, AI techniques P Credit average in 24 credit points of 3000-level study	Semester 1
COMP 4048	Information Visualisation	6	A Discrete mathematics P Credit average in 24 credit points of 3000-level study	Semester 2
COMP 5318	Knowledge, Discovery and Data Mining	6	A COMP5138 Relational Database Management Systems.	Semester 1, Semester 2
COMP 5338	Advanced Data Models	6	A COMP513 8 Relational Database Management Systems N COMP5306	Semester 1, Semester 2
COMP 5347	e-Commerce Technology	6	A COMP5028 Object Oriented Analysis and Design	Semester 1, Semester 2
COMP 5348	Enterprise Scale Software Development	6	A COMP5028 Object Oriented Analysis and Design and COMP5148 Quality Software Development in Practice	Semester 1
COMP 5416	Advanced Network Technologies	6	A COMP5116 Internet Protocols and COMP5126 Distributed Systems Programming	Semester 2, Semester 1
COMP 5424	Information Technology in Biomedicine	6		Semester 1
COMP 5425	Multimedia Storage, Retrieval & Delivery	6	A COMP 5122 Multimedia Human Computer Interaction	Semester 1
COMP 5426	Network Based High Performance Computing	6	A COMP5126 Distributed Systems Programming	Semester 1
INFO 4010	IT Advanced Topic A	6	P Permission of Head of School NB: Department permission required for enrolment.	Semester 1
INFO 4011	IT Advanced Topic B	6	P Permission of Head of School NB: Department permission required for enrolment.	Semester 2
INFO 4990	IT Research Methods	6	A Elementary statistics NB: Department permission required for enrolment.	Semester 1, Semester 2
INFO 4991	IT Research Thesis A	6	C INFO4990 and INF04992	Semester 1, Semester 2
INFO 4992	IT Research Thesis B	12	C INFO4990 and INF04991	Semester 1, Semester 2
INFO 4999	Computer Science Honours Result	0	P Permission of the Head of Department NB: Department permission required for enrolment.	Semester 1, Semester 2
ISYS 4050	Knowledge Management Systems	6	A Information systems concepts, database concepts P Credit average in 24 credit points of 3000-level study	Semester 1
NETS 4047	Pervasive Computing	6	A Networking concepts, operating system concepts, programming expertise P Credit average in 24 credit; points of 3000-level study	Semester 2

Cell Pathology Honours

CPAT 4011	Cell Pathology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2

Unit of Study		CP	A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition	Session
CPAT 4012	Cell Pathology Honours B	12	C CPAT 4011	Semester 1, Semester 2
CPAT 4013	Cell Pathology Honours C	12	C CPAT 4012	Semester 1, Semester 2
CPAT 4014	Cell Pathology Honours D	12	C CPAT 4013	Semester 1, Semester 2

Environmental Studies Honours

Not available in 2006. This Honours area will be available from 2007.

Geography Honours

GEOG 4011	Geography Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
GEOG 4012	Geography Honours B	12	C GEOG 4011	Semester 1, Semester 2
GEOG 4013	Geography Honours C	12	C GEOG 4012	Semester 1, Semester 2
GEOG 4014	Geography Honours D	12	C GEOG 4013	Semester 1, Semester 2

Geology Honours

GEOL 4011	Geology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
GEOL 4012	Geology Honours B	12	C GEOL 4011	Semester 1, Semester 2
GEOL 4013	Geology Honours C	12	C GEOL 4012	Semester 1, Semester 2
GEOL 4014	Geology Honours D	12	C GEOL 4013	Semester 1, Semester 2

Geophysics Honours

GEOP 4011	Geophysics Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
GEOP 4012	Geophysics Honours B	12	C GEOP 4011	Semester 1, Semester 2
GEOP 4013	Geophysics Honours C	12	C GEOP 4012	Semester 1, Semester 2
GEOP 4014	Geophysics Honours D	12	C GEOP 4013	Semester 1, Semester 2

History and Philosophy of Science Honours

HPSC 4101	Philosophy of Science	**6**	P Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. NB: NB: Department permission required for enrolmentDepartment permission required for enrolment.	Semester 2
HPSC 4102	History of Science	**6**	P Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. NB: NB: Department permission required for enrolmentDepartment permission required for enrolment.	Semester 1, Semester 2
HPSC 4103	Sociology of Science	**6**	P Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. NB: NB: Department permission required for enrolment.Department permission required for enrolment.	Semester 1
HPSC 4104	Recent Topics in HPS	6	P Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. NB: NB: Department permission required for enrolment.Department permission required for enrolment.	Semester 1, Semester 2

Unit of Study		CP	A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites: N: Prohibition	Session
HPSC 4105	HPS Research Methods	6	P Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. NB: NB: Department permission required for enrolment.Department permission required for enrolment.	Semester 2, Semester 1
HPSC 4999	History & Philosophy of Science Honours	0	P Available only to students admitted to HPS Honours. NB: Department permission required for enrolment.	Semester 1, Semester 2

Immunology Honours

BMED 4011	Immunology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
BMED 4012	Immunology Honours B	12	C BMED 4011	Semester 1, Semester 2
BMED 4013	Immunology Honours C	12	C BMED 4012	Semester 1, Semester 2
BMED 4014	Immunology Honours D	12	C BMED 4013	Semester 1, Semester 2

Information Systems Honours

ISYS 4301	Information Systems Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
ISYS 4302	Information Systems Honours B	12	C ISYS 4301	Semester 1, Semester 2
ISYS 4303	Information Systems Honours C	12	C ISYS 4302	Semester 1, Semester 2
ISYS 4304	Information Systems Honours D	12	C ISYS 4303	Semester 1, Semester 2

Marine Sciences Honours

MARS 4011	Marine Sciences Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
MARS 4012	Marine Sciences Honours B	12	C MARS 4011	Semester 1, Semester 2
MARS 4013	Marine Sciences Honours C	12	C MARS 4012	Semester 1, Semester 2
MARS 4014	Marine Sciences Honours D	12	C MARS 4013	Semester 1, Semester 2

Pure Mathematics Honours

MATH 4301	Pure Mathematics Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
MATH 4302	Pure Mathematics Honours B	12	C MATH 4301	Semester 1, Semester 2
MATH 4303	Pure Mathematics Honours C	12	C MATH 4302	Semester 1, Semester 2
MATH 4304	Pure Mathematics Honours D	12	C MATH 4303	Semester 1, Semester 2

Applied Mathematics Honours

MATH 4401	Applied Mathematics Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
MATH 4402	Applied Mathematics Honours B	12	C MATH 4401	Semester 1, Semester 2

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
MATH 4403	Applied Mathematics Honours C	12	C MATH 4402	Semester 1, Semester 2
MATH 4404	Applied Mathematics Honours D	12	C MATH 4403	Semester 1, Semester 2
Molecular Biotechnology Honours				
MOBT 4011	Molecular Biotechnology Honours A	12	NB: Department permission required for enrolment.	Semester 2, Semester 1
MOBT 4012	Molecular Biotechnology Honours B	12	C MOBT 4011	Semester 1, Semester 2
MOBT 4013	Molecular Biotechnology Honours C	12	C MOBT 4012	Semester 1, Semester 2
MOBT 4014	Molecular Biotechnology Honours D	12	C MOBT 4013	Semester 1, Semester 2
Microbiology Honours				
MICR 4011	Microbiology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
MICR 4012	Microbiology Honours B	12	C MICR 4011	Semester 2, Semester 1
MICR 4013	Microbiology Honours C	12	C MICR 4012	Semester 1, Semester 2
MICR 4014	Microbiology Honours D	12	C MICR 4013	Semester 1, Semester 2
Pharmacology Honours				
PCOL 4011	Pharmacology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
PCOL 4012	Pharmacology Honours B	12	C PCOL 4011	Semester 1, Semester 2
PCOL 4013	Pharmacology Honours C	12	C PCOL 4012	Semester 1, Semester 2
PCOL 4014	Pharmacology Honours D	12	C PCOL 4013	Semester 1, Semester 2
Physiology Honours				
PHSI 4011	Physiology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
PHSI 4012	Physiology Honours B	12	C PHSI 4011	Semester 1, Semester 2
PHSI 4013	Physiology Honours C	12	C PHSI 4012	Semester 1, Semester 2
PHSI 4014	Physiology Honours D	12	C PHSI 4013	Semester 1, Semester 2
Physics Honours				
PHYS 4011	Physics Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
PHYS 4012	Physics Honours B	12	CPHYS4011	Semester 1, Semester 2
PHYS 4013	Physics Honours C	12	CPHYS4012	Semester 1, Semester 2

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
PHYS 4014	Physics Honours D	12	C PHYS4013	Semester 1, Semester 2
Psychology Honours				
PSYC 4011	Psychology Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
PSYC 4012	Psychology Honours B	12	C PSYC 4011	Semester 1, Semester 2
PSYC 4013	Psychology Honours C	12	C PSYC 4012	Semester 1, Semester 2
PSYC 4014	Psychology Honours D	12	C PSYC 4013	Semester 1, Semester 2
Soil Science Honours				
SOIL 4021	Soil Science Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
SOIL 4022	Soil Science Honours B	12	C SOIL 4021	Semester 1, Semester 2
SOIL 4023	Soil Science Honours C	12	C SOIL 4022	Semester 1, Semester 2
SOIL 4024	Soil Science Honours D	12	C SOIL 4023	Semester 1, Semester 2
Mathematical Statistics Honours				
STAT 4201	Mathematical Statistics Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
STAT 4202	Mathematical Statistics Honours B	12	C STAT 4201	Semester 1, Semester 2
STAT 4203	Mathematical Statistics Honours C	12	C STAT 4202	Semester 1, Semester 2
STAT 4204	Mathematical Statistics Honours D	12	C STAT 4203	Semester 1, Semester 2

Table VII: Bachelor of Science and Technology (BST)

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
(a) Mathematics and Statistics				
Candidates are required to enrol in and complete a minimum of 12 credit points from the science subject areas of Mathematics and Statistics.				
(b) Experimental Science units of study				
Candidates are required to enrol in and complete at least 12 credit points from those units of study listed in Table I not including units in the following subject areas: Computational Science, Computer Science, History and Philosophy of Science, Information Systems, and Mathematics and Statistics.				
(c) Science/Technology associated with Humanities and Social Sciences units of study				
Candidates are required to enrol in and complete at least 12 credit points from the units of study listed below:				
NOTE: Any 6 credit points from the subject area of English may be taken instead of ENGL 1000.				
ACCT 1003	Financial Accounting Concepts	6	**N** Terminating unit. Cannot be counted with ACCT 1001 and ACCT 1002.	Semester 1
ACCT 1004	Management Accounting Concepts	6	N Terminating unit. Cannot be counted with ACCT 1001 and ACCT 1002.	Semester 2
DECO 1005	Hist & Theory of Multimedia & Animation	6	N DECO 2605	Semester 2
DECO 1006	Understanding Design & Cognition	6	N DECO 1004	Semester 1
EDUF 1018	Education, Teachers and Teaching	6	NEDUF1011	Semester 1
EDUF 1019	Human Development and Education	6	N EDUF 1012	Semester 2
ENGL 1000	University English	6	**P** This unit is available to all enrolled students and will count for credit across all faculties. There are no specific pre-requisites, co-requisites or prohibitions, but students are expected to have native or near native fluency in English. ENGL 1000 cannot be counted towards the junior credit points required to enrol in senior units of English.	Semester 1, Semester 2, Summer, Winter
HPSC 1000	Bioethics	6	N HPSC 1900 NB: This Junior unit of study is highly recommended to Intermediate and Senior Life Sciences students.	Semester 1
PHIL 1010	Society, Knowledge and Reason	6	N PHIL 1001 and PHIL 1002	Semester 2
SLSS 1001	Introduction to Socio-Legal Studies	6	NB: Available to BAS students only	Semester 1
CIVL 3010	Engineering and Society	6	A ENGG1803 Professional Engineering	Semester 1
ENGG 3005	Engineering & Industrial Management Fund	6	N ELEC3702, MECH3661	Semester 2
HPSC 3024	Science and Ethics	6	P At least 24 credit points of Intermediate or Senior units of study N HPSC3007	Semester 2
ENGG 4061	Innovation/Technology Commercialisation	6		Semester 1
(d) Technology/Applied Science units of study				
Candidates are required to enrol in and complete at least 12 credit points from the units of study listed below:				
For a major in Design Technology:				
(i) INFO 1003 and SOFT 1001; or				
(ii) DECO1007 and DECO 1008; or				
(iii) DECO 1100 and DECO 1200				
DECO 1007	Design Data Mgmt & Product Modelling	6	N DECO 2004, INFO 2005.	Semester 1
DECO 1008	3D Modelling	6	N DECO 2103 NB: This unit is for BDesComp students only. Others may enrol in DECO 2103.	Semester 2
DECO 1100	Digital Design Studio	12	N DECO 1011 NB: Core unit for Bachelor of Design Computing Students only.	Semester 1
DECO 1200	Interaction Design Studio	12	P DECO (1100 or 2101) N DECO 1021 NB: Available for BDesComp and BST students only.	Semester 2
INFO 1003	Foundations of Information Technology	6	A Basic computer operations N INFOIOOO, INFSIOOO, ISYS1003, INFO1903.	Semester 1, Semester 2
SOFT 1001	Software Development 1	6	A HSC Mathematics Extension 1 N SOFT 1901, COMP (1001 or 1901), DECO2011	Semester 1, Semester 2

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
For a major in Electronic Engineering				
(iv) ELEC 1103 and ELEC 1601				
ELEC 1103	Professional Electronic Engineering	6	A HSC Physics, HSC Mathematics extension 1. N ELEC 1102 Foundations of Electronic Circuits.	Semester 2
ELEC 1601	Professional Computer Engineering	6	A HSC Mathematics extension 1. N NETS2008 Computer System Organisation, NETS2908 Computer System Organisation (Adv), COMP2001 Computer Systems, COMP2901 Computer Systems (Adv).	Semester 1, Summer
For a major in General Engineering				
(v) ENGG 1803 andENGG 1800				
ENGG **1800**	Engineering Disciplines (Intro) Stream A	6		Semester 1
ENGG **1803**	Professional Engineering 1	6		Semester 1, Semester 2
For a major in Information Technology				
(vi) SOFT 1001 and SOFT 1002				
SOFT 1001	Software Development 1	6	A HSC Mathematics Extension 1 N SOFT 1901, COMP (1001 or 1901), DECO2011	Semester 1, Semester 2
SOFT 1002	Software Development 2	6	**P** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011 N SOFT 1902 or COMP (1002 or 1902) NB: Students with Credit or above in INFO 1903 are encouraged to request special permission to enter this unit.	Semester 1, Semester 2 Summer

(e) Requirements for a Major

Candidates are required to complete a major in a Science subject area (Table I) or one of the following majors in Technology/Applied Science.

In order to proceed to Year 2 and 3 of the degree, candidates for the Bachelor of Sciences and Technology must either have completed 12 credit points of Technology/Applied Science units of study in a single group designated in TableVII(d) or have completed Science units of study that are prerequisite for a chosen 2000 or 3000-level Science subject areas. Candidates who have completed the 12 credit points of Engineering units of study designated in Table VII(d)(iii) or Table VII(d)(iv) and who wish to complete a major in either General Engineering or Electronic Engineering are in addition required to complete 12 credit points of Junior Mathematics including MATH 1003 before proceeding to Year 2.

(i) Design Technology Major

For a major in Design Technology the minimum requirement is the completion of at least 36 credit points from units of study shown in the following Table, including:

(i) a minimum of 12 credit points of DECO units at 3000-level from the Table.

DECO 2010	Collaborative Virtual Environments	6	**P** DECO (1100 and 1200) or (2101 and 2102) or INFO (1000 or 1003) N DECO 2005. NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing students will receive preference.	Semester 1
DECO 2011	Design Programming	6	N SOFT 1001	Semester 1
DECO 2012	Sound Design & Sonification	6	**N** DECO 2607. NB: Permission required unless enrolled in the Bachelor of Design Computing or the BST. Other students may apply directly to the Faculty of Architecture for a place. Enrolment limited by teaching resources.	Semester 2
DECO 2013	Generative Design Systems	6	**P** DECO 2011 or SOFT 1001 N DECO (2601 or 2602 or 2603) NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing students will receive preference.	Semester 2
DECO 2101	Digital Image Design & Rep	6	N DECO (1001 or 1100) NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Architecture students will receive preference. Not available in the Bachelor of Design Computing.	Semester 1
DECO 2102	Interactive Multimedia Design	6	PDECO2101 NDECO (1002 or 2002 or 1200) NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Architecture students will receive preference. Not available in the Bachelor of Design Computing.	Semester2
DECO 2204	Principles of AutoCAD	6	N DESA 1202 or DESC (9101 or 9163) NB: Permission required unless enrolled as an undergraduate in the Faculty of Architecture or the BST. Other students may apply directly to the Faculty of Architecture on a quota basis.	Semester 2
DECO 2205	Principles of ArchiCAD	6	N DESA 1201 or DESC (9100 or 9162) NB: Permission required unless enrolled as an undergraduate in the Faculty of Architecture or the BST. Other students may apply directly to the Faculty of Architecture on a quota basis.	Semester 1
DECO 2606	Real Time 3D Multimedia	6	P DECO (1008 or 2103) and (SOFT 1001 or DECO 2011) NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing and BST students will receive preference.	Semester 2
DECO 3003	Design Computing Research Opportunity	6	A Computer programming. P 96 credit points and minimum WAM of 65. NB: Non Architecture students may apply directly to the Faculty of Architecture.Department permission required for enrolment.	Semester 2
DECO 3005	Advanced Interactive Multimedia Design	6	**P** DECO (1200 or 2102 or 2002) N DESC 9142. NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing and BST students will receive preference.	Semester 1

Unit of Study		*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
DECO 3006	Principles of 3D Animation	6	**P** DECO (1003 or 1008 or 2103) NDESC 9019 or 9141 NB: First preference given to third year students in the Bachelor of Design Computing or the Bachelor of Science & Technology. Other students may apply directly to the Faculty of Architecture on a quota basis.Department permission required for enrolment.	Semester 1
DECO 3007	Designing Tangible Computing	6	P DECO (1200 or 2102) and (DECO 2011 or SOFT 1001) NB: Places in this unit are limited by teaching resources. If your attempt to enrol on-line is refused please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing and BST students will receive preference.Department permission required for enrolment.	Semester 2
DECO 3100	Information Visualisation Design Studio	12	P DECO (1100 and 1200) or DECO (2101 and 2102) or DECO (2012 and 2013) N DECO 3001 NB: BDesComp and BST students only.	Semester 1
DECO 3200	Human-Computer Experience Des Stdo	12	P DECO 3100 or DECO (2101 and 2102 and (DECO 2011 or SOFT 1001)) N DECO 3002. NB: BDesComp and BST students only.	Semester 2

(ii) General Engineering Major

For a major in General Engineering the minimum requirement is the completion of at least 36 credit points from units of study shown in the following Table, including:

(i) MATH 2061; and

(ii) a minimum of 12 credit points at the 3000-level.

MATH 2061	Linear Mathematics and Vector Calculus	6	P MATH (1111 or 1001 or 1901 or 1906) and MATH (1014 or 1002 or 1902) and MATH (1003 or 1903 or 1907) N MATH (2001 or 2901 or 2002 or 2902 or 2961 or 2067)	Summer, Semester 1
AMME 2200	Thermodynamics and Fluids	6	A MATH 1001; MATH 1002; MATH 1003.	Semester 2
AMME 2301	Mechanics of Solids	6	P MATH 1001 or 1901, MATH 1002 or 1902, MATH 1003 or 1903, ENGG1802 orPHYSlOOl or 1901	Semester 1
AMME 2302	Materials 1	6		Semester 2
AMME 2500	Engineering Dynamics	6	PMATH 1001; MATH 1002; ENGG1802 orPHYSlOOl	Semester 1
CHNG 2801	Conservation and Transport Processes	6	A CalculusComputations (Matlab, Excel)Mass and Energy Balances P All core 1 st year engineering units of study.	Semester 1
CHNG 2802	Applied Maths for Chemical Engineers	6	A Enrolment in this unit of study assumes that all core science and engineering UoS in first-year have been successfully completed. P All core 1 st year engineering units of study. C CHNG 2803 (Analysis Practice 1)CHNG2801 (Conservation and Transport Processes)CHEM 2404 (Forensic and Environmental Chemistry)	Semester 1
CHNG 2804	Chemical & Biological Systems Behaviour	6	A Ability to conduct mass and energy balances, and the integration of these concepts to solve real chemical engineering problemsAbility to understand basic principles of physical chemistry, physics and mechanicsAbility to use mathematics of calculus (including vector calculus) and linear algebra, and carry out computations with MATLAB and MS EXCEL. P All core 1 st year engineering units of study. C CHNG 2805 (Industrial Systems and Sustainability)CHNG 2806 (Analysis Practice 2 - Treatment, Purification and Recovery Systems)CHEM 2403 (Chemistry of Biological Molecules)	Semester 2
CHNG 2805	Industrial Systems and Sustainability	6	A Ability to conduct mass and energy balances, and the integration of these concepts to solve real chemical engineering problemsAbility to understand basic principles of physical chemistry, physics and mechanicsAbility to use mathematics of calculus (including vector calculus) and linear algebra, and carry out computations with MATLAB and MS EXCEL. Ability to read widely outside of the technical literature, and to synthesise arguments based on such literatureAbility to write coherent reports and essays based on qualitative information P All core 1st year engineering units of study. C CHNG 2804 (Chemical and Biological Systems Behaviour)CHNG 2806 (Analysis Practice 2 - Treatment, Purification & Recovery Systems)CHEM 2403 (Chemistry of Biological Molecules)	Semester 2
CIVL 2110	Materials	6	A CHEM1001 Fundamentals of Chemistry 1A, ENGG1802 Engineering Mechanics	Semester 1
CIVL 2201	Structural Mechanics	6	A ENGG1802 Engineering Mechanics	Semester 1
CIVL 2230	Intro to Structural Concepts and Design	6	A ENGG1802 Engineering Mechanics, CIVL2110 Materials CIVL2201 Structural Mechanics	Semester 2
CIVL 2410	Soil Mechanics	6	A CIVL 2201 Structural Mechanics	Semester 2
CIVL 2611	Fluid Mechanics	6	A MATH 1001, MATH 1002, MATH 1003, MATH 1005	Semester 2
CIVL 2810	Engineering Construction and Surveying	6	A MATH 1001, MATH 1002, MATH 1003, MATH 1005	Semester 1
MECH 2400	Mechanical Design 1	6		Semester 2
AMME 3500	System Dynamics and Control	6	A AMME2500, MATH2061 P AMME2500 or MECH2500; MATH2061 or MATH2067 or (MATH2001 and MATH2005)	Semester 1
CHNG 3801	Process Design	6	A Enrolment in this unit of study assumes that all (six) core chemical engineering UoS in second year have been successfully completed. P All 1 st and 2nd year units of study in the Chemical Engineering degree program. C CHNG 3 803 (Design Practice 1 - Chemical & Biological Processes)CHNG 3 802 (Operation, Analysis and Improvement of Industrial Systems) NB: This UoS is part of an integrated third-year program in chemical engineering. Completion of this body of work is required before a student will be permitted to move into the final-year with its emphasis on detailed design work, thesis based research and advanced engineering options.	Semester 1

Unit	*of*	*Study*	*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
CHNG 3802	Operating/Improving Industrial Systems		6	A Enrolment in this unit of study assumes that all (six) core chemical engineering UoS in second year have been successfully completed. P All 1 st and 2nd year units of study relating to the Chemical Engineering degree program. C CHNG 3801 (Process Design)CHNG 3803 (Design Practice 1 - Chemical & Biological Processes) NB: This UoS is part of an integrated third-year program in chemical engineering. Completion of this body of work is required before a student will be permitted to move into the final-year with its emphasis on detailed design work, thesis based research and advanced engineering options.	Semester 1
CHNG 3805	Product Formulation and Design		6	A Mass and Energy Balances Conservation and Transport PhenomenaApplied Mathematics (for Chemical Engineering)Process Design ConceptsProcess Control and Optimisation Concepts P All 1 st and 2nd year units of study relating to the Chemical Engineering degree program. C CHNG 3806 (Management of Industrial Systems)CHNG 3807 (Design Practice 2 - Products and Value Chains) NB: This UoS is part of an integrated third-year program in chemical engineering. Completion of this body of work is required before a student will be permitted to move into the final-year with its emphasis on detailed design work, thesis based research and advanced engineering options.	Semester 2
CHNG 3806	Management of Industrial Systems		6	A Ability to conduct mass and energy balances, and the integration of these concepts to solve real chemical engineering problemsAbility to understand basic principles of physical chemistry, physics and mechanicsAbility to use mathematics of calculus (including vector calculus) and linear algebra, and carry out computations with MATLAB and MS EXCEL. Ability to read widely outside of the technical literature, and to synthesise arguments based on such literatureAbility to write coherent reports and essays based on qualitative information P All 1 st and 2nd year units of study relating to the Chemical Engineering degree. C CHNG 3805 (Product Formulation and Design)CHNG 3807 (Design Practice 2 - Products and Value Chains) NB: This UoS is part of an integrated third-year program in chemical engineering. Completion of this body of work is required before a student will be permitted to move into the fourth year.	Semester 2
CIVL 3205	Concrete Structures 1		6	A CIVL2110 Materials, CIVL2201 Structural Mechanics, CIVL2230 Intro to Structural Concepts and Design	Semester 1
CIVL 3411	Foundation Engineering		6	A CIVL 2410 Soil Mechanics	Semester 2
CIVL 3612	Environmental and Fluids Engineering		6	A CIVL 2611 Fluid Mechanics	Semester 1
CIVL 3812	Project Appraisal		6	N CIVL 4803 Engineering Management	Semester 1
MECH 3260	Thermal Engineering		6	A Fundamentals of thermodynamics are needed to begin this more advanced course. P (AMME2200 or MECH2200 or MECH2201)	Semester 2
MECH 3261	Fluid Mechanics		6	P (AMME2200 or AERO2201 or MECH2202) and (MATH2061 or MATH2067 or (MATH2001 and MATH2005)	Semester 1
MECH 3361	Mechanics of Solids 2		6	A MATH1001, MATH1002, MATH1003, ENGG1802 P AMME2301 or AERO2300 or MECH2300; MATH2061 or MATH2067 or MATH2005	Semester 1
MECH 3460	Mechanical Design 2		6	A ENGG1802; AMME2301; AMME2500. P MECH2400	Semester 2

(iii) Electronic Engineering Major

For a major in General Engineering the minimum requirement is the completion of at least 36 credit points from units of study shown in the following Table, including:

(i) MATH 2061; and

(ii) a minimum of 12 credit points at the 3000-level.

MATH 2061	Linear Mathematics and Vector Calculus		6	P MATH (1111 or 1001 or 1901 or 1906) and MATH (1014 or 1002 or 1902) and MATH (1003 or 1903 or 1907) N MATH (2001 or 2901 or 2002 or 2902 or 2961 or 2067)	Summer, Semester 1
ELEC 2103	Simulation & Numerical Solutions in Eng.		6	A 36 credit points including ELECl 102 Foundations of Electronic Engineering or ELECl 103 Professional Electronic Engineering. N ELEC2102 Engineering Computing, COSC1001 Computational Science in Matlab, COSC1901 Computational Science in Matlab (Advanced).	Semester 1
ELEC 2104	Electronic Devices and Basic Circuits		6	A ELECl 102 Foundations of Electronic Circuits or ELECl 103 Professional Electronic Engineering. N ELEC2401 Introductory Electronics.	Semester 1
ELEC 2302	Signals and Systems		6	A MATH 1001 Differential Calculus and MATH 1002 Linear Algebra and MATH 1003 Integral Calculus and Modelling. N ELEC2301 Signals & Systems, MATH3019 Signal Processing, MATH3919 Signal Processing (Adv).	Semester 2
ELEC 2602	Digital System Design		6	A ELEC 1101 Foundations of Computer Systems or ELEC 1601 Professional Computer Engineering. N ELEC3601 Digital Systems Design, ELEC3608 Digital Systems Design.	Semester 2
ELEC 3204	Power Electronics and Drives		6	A ELEC2401 Introductory Electronics or ELEC2104 Electronic devices and basic circuits or ELEC2001 Electrical and Electronic Engineering or ELEC2003 Electrical and Electronic Engineering A. N ELEC3202 Power Electronics and Drives.	Semester 2
ELEC 3304	Control		6	A ELEC2301 Signals and Systems or ELEC2302 Signals and Systems. N ELEC3302 Fundamentals of Feedback Control, MECH3800 Systems Control, AMME3500 System Dynamics and Control, CHNG3302 Process Control.	Semester 2
ELEC 3305	Digital Signal Processing		6	A ELEC2301 Signals & Systems or ELEC 2302 Signals & Systems. N ELEC 3303 Digital Signal Processing.	Semester 1
ELEC 3404	Electronic Circuit Design		6	A ELEC2401 Introductory Electronics or ELEC2104 Electronic Devices and Basic Circuits. N ELEC3401 Electronic Devices and Circuits.	Semester 1
ELEC 3405	Comunications Electronics and Photonics		6	A ELEC2401 Introductory Electronics or ELEC2104 Electronic Devices and Basic Circuits. N ELEC3402 Communications Electronics.	Semester 2
ELEC 3505	Communications		6	A ELEC2301 Signals and Systems or ELEC2302 Signals and Systems. N ELEC3503 Introduction to Digital Communications.	Semester 1

Unit of Study	*CP*	*A: Assumed knowledge P: Prerequisites Q: Qualifying C: Corequisites N: Prohibition*	*Session*
ELEC **3607** Embedded Computing	6	A ELEC 1101 Foundations of Computer Systems or ELEC2602 Digital System Design. N ELEC2601 Microcomputer Systems.	Semester 2
ELEC **3802** Fundamentals of Biomedical Engineering	6	A ELEC2401 Introductory Electronics or ELEC2001 Electrical and Electronic Engineering or ELEC2003 Electrical and Electronic Engineering A or ELEC2104 Electronic Devices and Basic Circuits. N ELEC3801 Fundamentals of Biomedical Engineering.	Semester 1

(iv) Information Technology Major

For a major in Information Technology, the minimum requirement is the completion of at least 36 credit points at 2000-level and above from Table III (excluding any units which are not available in the BST degree), which must contain:

(i) at least 12 credit points from Tablelll(i) and/or (ii), and must also contain

(ii) at least 12 credit points from Table Ill(iv) and/or (v).

Unit of study descriptions

The units of study in this section are generally organised alphabetically by School or Department, except for those listed below.
EMHU and HSTO can be found under the Anatomy and Histology entry.
COMP, INFO, ISYS, NETS, MULT and SOFT can be found under the Information Technologies entry.
NTMP can be found under the Marine Science entry.
STAT can be found under the Mathematics and Statistics entry.
VIRO can be found under the Microbiology entry.
NEUR can be found under the Physiology entry.

Aerospace, Mechanical and Mechatronic Engineering

The School of Aerospace, Mechanical and Mechatronic Engineering is part of the Faculty of Engineering. In addition to providing professional training in aerospace, mechanical and mechatronic engineering, units of study in the School are available to students in the Faculty of Science who meet any prerequisite requirements for a particular unit.

Registration

Timetable information on alternative lecture/tutorial/laboratory/practical classes is available in the General Office of the School.

Tutorials and laboratories

All students are required to undertake the tutorial and laboratory work associated with the chosen units of study, details of which are provided in the timetables. The experimental and tutorial work, an integral part of the unit of study, complements the lecture material.

Double degree

Science graduates may obtain up to two years advanced standing towards a Bachelor of Engineering degree in Aerospace, Mechanical, Mechatronic or Biomedical Engineering. Students wishing to undertake this option must apply through UAC and compete on the basis of academic merit. Information about application procedures is available from the Engineering Faculty Office in the Engineering Faculty Building.

Agricultural Chemistry and Soil Science

Agricultural Chemistry

Study in the discipline of Agricultural Chemistry is offered by the Faculty of Agriculture, Food and Natural Resources.

Units of study in Agricultural Chemistry for Science students cover aspects of chemistry and biochemistry which are relevant in basic and applied biological sciences including agriculture, the environment and food science. Emphasis is placed on the chemistry of molecules of biological, agricultural and environmental significance both naturally occurring (eg. in foods and natural fibres), and chemically synthesised (eg. insecticides and herbicides). The biochemistry is planned around the relationship between living organisms and their environment and includes sections on the metabolism of inorganic and synthetic materials by animals, plants and micro-organisms.

The units of study available are: AGCH2003, Introductory Rural Environmental Chemistry (6 credit points Intermediate); AGCH3025 and AGCH3026, Chemistry and Biochemistry of Foods A and B respectively (6 credit points Senior each); AGCH3030 and AGCH3031, Rural Environmental Chemistry A and B respectively (6 credit points Senior each); AGCH3024, Chemistry and Biochemistry of Foods (6 credit points Senior); and Agricultural Chemistry Honours.

AGCH 2003 **Rural Environmental Chemistry (Intro)**

6 credit points. B Agr Ec, B Hort Sc, B L W Sc, B Res Ec, B Sc, B Sc (Environmental), B Sc Agr, UG Study Abroad Program. Dr Robert Caldwell. **Session:** Semester 1. **Classes:** 3 lec/week and 33 hours of lab/semester. **Prerequisites:** 12 credit points of Junior Chemistry. **Prohibitions:** AGCH2001, AGCH2002, CHEM2404. **Assessment:** One 2 hr exam, prac & quizzes.

This introductory unit of study consists of aspects of chemistry relevant in studies of basic and applied biological sciences including agriculture, food and the rural environment. Lecture topics include an introduction to quantitative aspects of biophysical, environmental and aquatic chemistry with particular reference to protocols for specimen sampling and maintenance of specimen quality; the principles of basic analytical methods such as spectroscopy, chromatography and electrochemistry; environmental aspects of water such as thermal properties and its behaviour as a solvent of hydrophobic solutes, surfactants, neutral hydrophilic solutes, salts and other electrolytes, and gases. The lectures will also include environmental nutrient cycling (C, N, S, O, P, micronutrients) with reference to pesticides, herbicides, organic and inorganic pollutants affecting agricultural produce and the environment, and gases of environmental concern.

Eleven laboratory sessions will demonstrate aspects of analytical chemistry including: elemental analysis of foods and natural waters, spectrophotometry, chromatographic techniques, preparation of buffers, fundamentals of pH and conductance measurement, water as a solvent including the effect of surfactants and electrolytes. Students will analyse natural water samples using the skills acquired in earlier laboratory and write an environmental assessment from their findings. The introductory laboratory session for the unit will include a tutorial on safety procedures in a chemistry laboratory.

AGCH 3024 **Chemistry and Biochemistry of Foods**

6 credit points. B Res Ec, B Sc, B Sc (Environmental), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr Robert Caldwell. **Session:** Semester 1. **Classes:** 3 lec/wk and 8 x 3 hr pracs. **Prerequisites:** 12 credit points of Intermediate units from Molecular Biology and Genetics, Biochemistry or Chemistry. **Prohibitions:** AGCH (3016 or 3017 or 3025). **Assessment:** One 2hr exam (50%), assignments (20%), laboratory (30%).

NB: Department permission required for enrolment.

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 dough and protein chemistry during baking and cooking; flavour chemistry and the chemistry and biochemistry of anti-nutritional and toxic constituents of plants and foods.

The practical exercises in this unit of study will focus on the characterisation of food hydrocolloids in terms of particle size distribution, molecular weight distribution, and molecular structure. Students should emerge with a good understanding of the fundamental basis of hydrocolloid characterisation, some familiarity with a broad range of commonly used techniques, and good skills in assessment and processing of experimental data.

AGCH 3025 **Chemistry and Biochemistry of Foods A**

6 credit points. B An Vet Bio Sc, B Hort Sc, B L W Sc, B Sc, B Sc (Environmental), B Sc (Nutrition), B Sc Agr, UG Study Abroad Program. Dr Robert Caldwell. **Session:** Semester 1. **Classes:** 3 lec/wk, 8 x 3 hr prac per semester. **Prerequisites:** 6 credit points of Intermediate units in Agricultural Chemistry, Chemistry or Biochemistry. **Prohibitions:** May not be counted with AGCH (3017, 3024).. **Assessment:** One 2 hr theory exam, one 1 hr theory of prac exam, assignment and prac reports.

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 dough and protein chemistry during baking and cooking;
- anti-nutritional and toxic constituents of plants and foods; and
- flavour chemistry

The laboratory exercises aim to give students an understanding of the methods used in the analysis of foods and other biological materials, and will include:
- analysis of carbohydrates including starch and dietary fibre;
- spectroscopic, enzymic, and chromatographic methods.

AGCH 3026 **Chemistry and Biochemistry of Foods B**

6 credit points. B An Vet Bio Sc, B Hort Sc, B L W Sc, B Sc, B Sc (Environmental), B Sc (Nutrition), B Sc Agr, UG Study Abroad Program. Dr Robert Caldwell. **Session:** Semester 1. **Classes:** 2 hr lec/seminar/workshop/wk; 24 hrs of prac/semester; site visits. **Prerequisites:** 6 credit points of Intermediate Chemistry, Biochemistry or Agricultural Chemistry. **Corequisites:** AGCH 3025. **Prohibitions:** AGCH3003, AGCH3005. **Assessment:** Five written assignments, one 1 hr theory of prac exam, prac reports and poster presentation.

This unit of study aims to give students an understanding of global food systems and global food security. In the lecture/seminar/workshop component, topics covered will include the sustainable production of major food crops; the role of genetically modified crops in food sustainability and quality; principles and methods in food quality control and assessment; chemical and biochemical aspects of food quality in relation to food processing and nutritional values.

The laboratory exercises aim to give students an understanding of the methods used in the analysis of foods and other biological materials, and will include:
- analysis and examination of protein functionality in foods;
- spectroscopic, enzymic, and chromatographic methods.

AGCH 3030 **Rural Environmental Chemistry A**
6 credit points. B An Vet Bio Sc, B Hort Sc, B L W Sc, B Sc, B Sc (Environmental), B Sc Agr, UG Study Abroad Program. Prof Ivan Kennedy (Coordinator). **Session:** Semester 1. **Classes:** 6 day field trip in orientation week, 21 hr lee & 25 hr prac. **Prerequisites:** 6 credit points of either Intermediate Agricultural Chemistry, Chemistry, Biochemistry, Plant Science or Environmental Science. **Prohibitions:** AGCH3020, AGCH3021, AGCH3022.. **Assessment:** One 2 hr exam, field trip and laboratory reports.
This unit commences with a field trip to the Namoi and the Macquarie Valleys, where agriculture largely based on irrigation has been developed. Environmental impacts on vegetation, soil and water of agricultural enterprises such as cotton farming and human settlement will be assessed in a professional field trip report. Field observations on pH, nutrient and salt content, pesticide, and microbial content will be made on water, sediment, soils and in constructed wetlands, with samples returned for more detailed laboratory analysis at the University. Lectures will complement the field trip, including environmental chemistry of heavy metals, their effects on organisms; mechanisms of tolerance and phytoremediation; risk assessment of pesticides including herbicides, their mode of action and environmental fate; analysis and monitoring of pesticide residues by GC, GC-MS and immunoassay (ELISA); maximum residue limits (MRLS) and residue surveys; remediation of pesticides in ecosystems; design of new pesticides and means of pest control. Laboratory sessions will be related to these lecture topics, including 6-7 sessions on atomic absorption analysis for nutrients and heavy metals, mercury analysis, pesticide analysis by GLC, HPLC, MS and ELISA.

AGCH 3031 **Rural Environmental Chemistry B**
6 credit points. B An Vet Bio Sc, B Hort Sc, B L W Sc, B Sc, B Sc (Environmental), B Sc Agr, UG Study Abroad Program. Prof Ivan Kennedy (Coordinator). **Session:** Semester 2. **Classes:** 5-day field trip in AVCC common break; 21 hr lee and 30 hr prac and project/semester. **Prerequisites:** 6 credit points of either Intermediate Agricultural Chemistry, Chemistry, Biochemistry, Plant Science or Environmental Science. **Prohibitions:** AGCH3020, AGCH3021, AGCH3022. **Assessment:** One 2 hr exam, field-trip report and laboratory reports.
This field-oriented course will (i) provide understanding of chemical and biochemical processes in rural ecosystems and their sustainability, with particular reference to global warming, (ii) include a field trip and professional report to illustrate relevant case studies at several centres in eastern Australia (Canberra, Snowy Mountains, Murray and Murrumbidgee catchments) specialising in research related to global warming, acidification and water quality including salinisation (iii) conduct laboratory sessions and group research project to study a problem in a professional setting. Practical solutions will be sought by students, based on a field theory of action in ecosystems. Lectures will cover the environmental carbon, nitrogen and sulphur cycles, including bioenergetics of autotrophic and heterotrophic action; photosynthesis; nitrification and denitrification; biological nitrogen fixation; sulphur metabolism; production of greenhouse gases; pH balancing and efficient nutrient uptake; acidification of ecosystems and effects on plants and animals; remediation and control of greenhouse emissions; bioremediation of acidification and salinisation. The laboratory sessions and the group project will illustrate these environmental processes, including greenhouse gas production, methane andNOx, photosynthesis and nitrogen fixation, and monitoring of endocrine-disrupting compounds including pesticides using GLC, HPLC and ELISA.

Agricultural Chemistry Honours
The fourth year unit of study in Agricultural Chemistry 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 research.
Candidates should consult the Department as soon as possible after results in Senior unit of study are obtained. The unit of study consists of a research project (with submission of a dissertation), two essays, an oral presentation and attendance at specialist lectures and seminars in agricultural, biological and environmental chemistry. The essays and oral presentation are selected from a list of topics in basic and applied biological and environmental chemistry, and food science. Projects are usually available in one of the following areas of current research interest in the Department: carbohydrate and nitrogen metabolism in plants, biological nitrogen fixation in legumes and associated with wheat, insect metabolism, the biochemistry and environmental chemistry of pesticides and herbicides, acidification of ecosystems including the mechanism of aluminium phytotoxicity, residue analysis in foods and other aspects of food science, cereal chemistry and biochemistry.

Soil Science
The Soil Science units of study aim primarily at giving students an introduction to the three major branches of soil science, namely soil physics, soil chemistry, and pedology, and at providing the basis for a professional career in each of these divisions for students wishing to specialise.
The introductory unit of study is particularly relevant for students interested in the environmental and geological sciences and in land-use management.

SOIL 2003 **Soil Properties and Processes**
6 credit points. B Agr Ec, B An Vet Bio Sc, B Anim Sc, B Hort Sc, B L W Sc, B Res Ec, B Sc, B Sc (Environmental), B Sc Agr, UG Study Abroad Program. Dr Cattle, Prof McBratney, Dr Singh. **Session:** Semester 1. **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.
Textbooks
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 2004 **The Soil Resource**
6 credit points. B Sc, B Sc (Environmental), UG Study Abroad Program. Dr Balwant Singh (Coordinator), Professor Alex McBratney, Dr Stephen Cattle. **Session:** Semester 2. **Classes:** (2 lec,2 hr prac)/wk. **Prerequisites:** GEOL1001 or GEOL1002/1902 or ENVI1002 or GEOG1001. **Assessment:** Fieldtrip participation (5%), Soil mapping report (25%), Laboratory report (15%), Examination (55%).
The unit of study is designed to provide a detailed knowledge of the important features and problems of Australian soils. By the end of this unit of study, students will develop skills in describing and interpreting soil profile features in the field. They will become familiar with quantitative soil data handling procedures and be able do quantitative soil mapping; and measure common soil properties in the laboratory. They will also learn to work in a team environment and write a report on soil mapping and laboratory analysis.
The lecture topics include- Features, geography and management of Australian soils; Digital soil mapping - concepts and spatial prediction of soil classes; Soil quality, soil health and soil function - physical, biological and chemical indicators of soil sustainability; Soil structure: The elements of soil structure and methods of their assessment; The degradation and amelioration of soil structure and its effect on agriculture; Soil water erosion - detachment, entrainment, runoff and deposition; Soil acidification: effects of soil acidity in soils, forms of soil acidity, sources of soil acidity, buffering mechanisms in soils, soil pH and Al availability, extent of soil acidity in Australia and remediation of soil acidity; Soil salinity: causes, sources of salts, nature of soil salinity, salinity parameters in soil and water, effects of salinity on plant growth, management of soil salinity; Soil contamination: concepts/definitions, sources of contaminants, effects of contaminants, major contaminants in soil, remediation of contaminated soils.; soil carbon accounting.
Textbooks
A laboratory manual will made be available to the students.
Brady NC & Weil RR, The Nature and Properties of Soils. 13th ed. (or any later edition) Prentice Hall, New Jersey, 2002
Isbell RF McDonald WS & Ashton LJ, Concepts and Rationale of the Australian Soil Classification. Australian Collaborative Land Evaluation Program, CSIRO Publishing, Canberra, 1997
White RE, Principles and Practice of Soil Science: the Soil as a Natural Resource. 3rd ed., Blackwell Science, Oxford, 1997
McKenzie N, Jacquier D, Isbell, R & Brown K, Australian Soils and Landscapes: An Illustrated Compendium. CSIRO publishing, Melbourne, 2004
A more comprehensive reading list will be provided in the laboratory manual.

SOIL 3005 **Field and Laboratory Soil Physics**

6 credit points. B Anim Sc, B Hort Sc, B L W Sc, B Sc, B Sc (Environmental), B Sc Agr, UG Study Abroad Program. Professor Alex McBratney. **Session:** Semester 1. **Classes:** (21ec/2hr prac)/wk, 5 days in the field (prior to beginning of February semester). **Prerequisites:** SOIL 2004. **Assessment:** One 2hr exam, field report in form of webpage, lab report, presentation.
NB: Department permission required for enrolment.

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 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 electrical properties of soil and fundamentals of numerical computer modelling of soil physical processes.

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

Textbooks

Reference books:

Hillel D. Environmental Soil Physics: Fundamentals, Applications, and Environmental Considerations. Academic Press, 1998
Jury WA & Horton R. Soil Physics. John Wiley, 2004
Warrick AW. Soil Water Dynamics. Oxford, 2003

SOIL 3006 **Field and Laboratory Pedology**

6 credit points. B Anim Sc, B Hort Sc, B L W Sc, B Sc, B Sc (Environmental), B Sc Agr, UG Study Abroad Program. Dr Stephen Cattle. **Session:** Semester 1. **Classes:** (2 lec/2hr prac)/wk, 5 days in the field (prior to beginning of February semester). **Prerequisites:** SOIL 2004. **Assessment:** One 3hr exam, field report, lab report, presentation.
NB: Department permission required for enrolment.

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 main part of this unit of study is the pedological characterization of a number of contrasting soil profiles sampled during the pre-semester field trip. This 5 day field-trip begins 10 days before the beginning of the February semester and involves the study and sampling of soil through central and northern NSW. Students become acquainted with soil types in a variety of landscape, geologic, climatic and landuse settings and develop an understanding of the importance of different soil parent materials. Linkages are made between soil formation processes and resultant soil properties, and the role of soil in various environmental and agricultural ecosystems. Field skills acquired during this trip include a proficiency in soil profile description and an ability to classify soil type according to the Australian Soil Classification scheme. Laboratory analyses of soil samples collected during the field trip include particle-size analysis and extraction of fine-sand fraction for optical identification and quantification of the mineral species present. X-Ray diffraction is used to identify the clay minerals and elucidate mineralogical transformations in these samples. Scanning electron microscopy is also used to examine surface features and mineral composition. Thin sections of some typical NSW soil types are examined and the main features are identified and quantified. The data from these micromorphological investigations are used to provide an understanding of the pedogenesis of soil profiles in specific locations. The lecture series for this unit of study focuses on the main soil-forming (pedogenetic) processes operating both in Australia and abroad. Rock and soil mineral transformations and mechanisms for soil horizon development are addressed. Case studies and recent pedological research publications are used to highlight these topics. A detailed study, including exercises, is also made of two main international soil classification schemes, Soil Taxonomy and the World Reference Base for Soil Resources (WRB), and the Australian Soil Classification system.

Textbooks

Reference books:

Buol S, Walker M, Southard R. Soil Genesis and Classification. Iowa State University. 2003
Isbell R. The Australian Soil Classification. CSIRO, 1996
Jenny H. Factors of Soil Formation: A System of Quantitative Pedology. Dover. 1994
McKenzie N, Jacquier D, Isbell R & Brown K. Australian Soils and Landscapes. CSIRO, 2004
Van Breeman, N & Buurman, P. Soil Formation. 2nd Edition. Kluwer Academic, 2002
Young A & Young R. Soils in the Australian Landscape. Oxford University Press, 2001

SOIL 3007 **Environmental Soil Chemistry**

6 credit points. B Anim Sc, B Hort Sc, B L W Sc, B Sc, B Sc (Environmental), B Sc Agr, UG Study Abroad Program. Dr Balwant Singh. **Session:** Semester 2. **Classes:** (2 lee, 3hrprac)/wk(wksl-13). **Prerequisites:** SOIL 2004. **Assessment:** One 3hr exam, 4 lab reports and one oral presentation on a given topic.
NB: Department permission required for enrolment.

The main objective of the unit is to develop an understanding of the common chemical properties and processes in soil environment. By the end of this unit of study, students will become familiar with soil chemical composition and develop skills in describing chemical processes in soil environment. They will be able to measure various chemical properties of soil and soil solution in the laboratory; and perform chemical speciation of ions in soil solution. Students will also learn to work in a team environment and develop communication and writing skills.

Syllabus summary: The lecture topics include- the structure and chemistry of inorganic components in soil, surface charge of soil minerals, chemistry and general properties of soil organic matter, important functional groups of soil organic matter, role of organic matter in soil, cation exchange in soil, selectivity of cations on soil colloids, cation exchange reactions and selectivity coefficients, adsorption reactions of environmentally important ions, surface functional groups, adsorption isotherms, equilibrium based adsorption models, point of zero charge, diffuse double layer-theory and models, surface complexation models, soil solution-importance, methods of obtaining soil solutions, models to determine activity coefficients, speciation, dissolution and solubility processes in soil environment, soil chemical equilibria, geochemical speciation models and redox chemistry of soil.

Textbooks

Evangelou VP, Environmental Soil and Water Chemistry: John Wiley & Sons, New York, 1998
Lindsay WL, Chemical Equilibria in Soils. John Wiley & Sons, New York, 1979
McBride MB, Environmental Chemistry of Soils. Oxford University Press, New York, 1994.
Sparks DL, Environmental Soil Chemistry. Second Edition, Academic Press, San Diego, 2003
Sposito G, The Chemistry of Soils. Oxford University Press, New York, 1989

Soil Science Honours

The honours program consists of several parts:
(i) supplementary lectures and seminars;
(ii) topics of study selected from Agricultural Chemistry, Biometry, Botany, Geology, Physical Chemistry, Mathematics, Soil Mechanics, Soil Microbiology, etc;
(iii) a small amount of field work performed under direction; and
(iv) a project in one branch of soil science.

Anatomy and Histology

The Department of Anatomy and Histology teaches topographical and neuroanatomy, histology and cell biology, developmental biology and physical anthropology to students in the Faculties of Science, Medicine and Dentistry.

Location

The Department is in the Anderson Stuart Building. The Department Office is on the first floor, Room S463.

Noticeboards

The noticeboards are situated near Rooms W225, S431 and S463. Students are advised to consult the noticeboard regularly. Timetables for lectures and practical classes will be posted, where possible, in the week before the beginning of each semester.

Advice on units of study and enrolment

Students wishing to enrol in units of study in Anatomy and Histology must consult the Departmental advisers in the Enrolment Centre during re-enrolment week prior to enrolling in the units of study. Information will be available at this time on the units of study offered by the Department and on the advisability of various combinations of subjects.

Registration

All students should register with the Department. Please consult the Departmental noticeboards for details.

Vaccinations

All students studying gross anatomy or neurosciences who may also be exposed to human tissues or fluids should contact the University Health Service regarding vaccinations.

Protective Clothing

All students studying gross anatomy or neurosciences must wear a laboratory coat or gown in tutorial rooms and a gown in dissection rooms and must wear gloves when handling cadaveric material.

Web-site

The Department's website is located at http://www.anatomy.usyd.edu.au/.

ANAT 2008 **Principles of Histology**

6 credit points. B Sc, UG Study Abroad Program. Associate Professor Maria Byrne. **Session:** Semester 1. **Classes:** 2 Lectures, 1 practical (2 hr), on-line and museum exercises (6hrs total). **Assumed Knowledge:** General concepts in human biology. **Prerequisites:** 12 credit points of Junior Biology or Junior Psychology. **Prohibitions:** ANAT2001. **Assessment:** lhr theory exam, 1 hr practical exam, 4 quizzes.

This unit of study covers the principles of cell biology and study of the structure of cells, tissues and organ systems at the light and electron microscopic levels. The focus is on human systems. Extension exercises introduce students to the connection between histology and anatomy. Modern practical applications of histological techniques and analysis for research are also presented.

Textbooks

Ross, MH and Paulina W. 2005 Histology-A Text and Atlas. 5th Edition, Lippincott Williams and Wilkins, New York

ANAT 2009 **Comparative Primate Anatomy**

6 credit points. B Sc, UG Study Abroad Program. Dr Denise Donlon. **Session:** Semester 2. **Classes:** 2 lees, 1 2hrprac/wk, museum project. **Assumed Knowledge:** Knowledge of basic vertebrate biology. **Prerequisites:** 12 credit points of Junior Biology or Junior Psychology or Junior Archaeology. **Prohibitions:** ANAT2002. **Assessment:** One 1 hour theory exam, one 30 min prac exam, two quizzes, one 2000 word essay.

This unit of student covers the musculo-skeletal anatomy of the human body with particular emphasis on human evolution and comparisons with apes and fossil hominids. The topics covered include the versatility of the human hand, in manipulation and locomotion, bipedalism, climbing and brachiation in apes, and the change in pelvic anatomy associated with bipedalism and obstetric consequences.

Textbooks

Kapit, W. and Elson, L.M. The Anatomy Coloring Book. Addison-Wesley. 2001

Reference books:

Aiello, L and Dean, C. An Introduction to Human Evolutionary Anatomy. Academic Press 1990.

Zilman, A.L. The Human Evolution Coloring Book. Barnes and Noble, Sydney. 1982

ANAT 2010 **Concepts of Neuroanatomy**

6 credit points. B Sc, UG Study Abroad Program. Dr Karen Cullen. **Session:** Semester 2. **Classes:** 2 lees, 2hrprac/wk. **Assumed Knowledge:** Background in basic mammalian biology. **Prerequisites:** BIOL (1001 or 1901) and one of: BIOL (1002 or 1902 or 1003 or 1903) or PSYC (1001 and 1002). **Prohibitions:** ANAT2003. **Assessment:** One 1.5 hr theory exam, One 1 hr practical exam, 2000 word essay, practical reports.

Students are introduced to the structure and organisation of the central and peripheral nervous system. The course begins with an exploration into the make-up of the individual cells, followed by an examination of the different regions of the nervous system. A final theme of the course touches on the organisation of various systems (sensory and motor), together with aspects of higher-order function (memory). In essence, the course covers general concepts of organisation, structure and function of the brain and its different areas. The practicals offer students the unique opportunity to examine specimens in the Anatomy labs and museum. This course will be of considerable interest to students studying science and related disciplines, as well as those wishing to pursue further study in Neuroscience at senior levels.

Textbooks

Bear, M.F., B.W. Connors, M.A. Paradiso. Neuroscience: Exploring the Brain (second edition), Williams and Wilkins (2001).

ANAT 3004 **Cranial and Cervical Anatomy**

6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Robin Arnold. **Session:** Semester 2. **Classes: 2** lee, **3-4** hr tut. **Assumed Knowledge:** General knowledge of biology. **Prerequisites:** ANAT2002 or ANAT2009 or BMED2803 or BMED2804 or BMED2805orBMED2806. **Prohibitions:** ANAT3005. **Assessment:** One 1.5hr theory exam, one lhr prac exam, one 2500 word essay, continuous assessment (10%).

NB: The completion of 6 credit points ofMBLG is highly recommended.

This unit of study covers skull, muscles of facial expression, muscles of jaw and neck, ear, eye, nose, oral cavity and larynx and pharynx as well as peripheral distribution of cranial nerves in the head and neck. The functional components of the cranial nerves and their relationship to the special senses and special motor functions such as facial gesture and speech are also studied. Tutorials are designed to encourage students to develop their own approach to the understanding and organisation of subject material. Communication of key concepts and presentation of subject material in an academic context are encouraged and assessed in a major assignment.

Textbooks

Mackinnon and Morris. Oxford Textbook of Functional Anatomy, Vol 3: Head & Neck. Oxford University Press. 1990

An anatomy atlas such as Rohan, Yokochi and Lutjen-drecoll, Color Atlas of Human Anatomy.

ANAT 3006 **Forensic Osteology**

6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Denise Donlon. **Session:** Semester 1. **Classes:** 2 lee, 2hr tut & 2hr prac/week. **Assumed Knowledge:** An understanding of basic human musculoskeletal anatomy. **Prerequisites:** Credit in ANAT2009 or Credit in ANAT2002 (for students who completed Intermediate study before 2005). **Assessment:** lhr theory exam, 1/2 hr prac exam, continuous assessment, case study.

NB: The completion of 6 credit points ofMBLG is highly recommended.

This unit of study aims to introduce students to the area of forensic osteology, which is the study of human skeletal remains within the legal context. Thus the unit of study aims to help students learn about human morphology and variation through the investigation and identification of human bones. It will also help students gain skills in observation and rigorous record taking and in analysis and interpretation. Production of case reports and practice in acting as 'expert witness' will improve students written and oral skills. An additional objective will be to assist students in learning to deal with legal and ethical issues.

Textbooks

Burns, K.R 1999 Forensic Anthropology Training Manual. Prentice Hall.

ANAT 3007 **Visceral Anatomy**

6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Robin Arnold. **Session:** Semester 1. **Classes:** 2hrs lee & 3-4 hr prac/wk. **Assumed Knowledge:** General knowledge of biology. **Prerequisites:** ANAT2009 or ANAT2010 or BMED2803 or BMED2804 or BMED2805 or BMED2806. **Assessment:** One 1.5hr theory exam, one lhr prac exam, one 1200 word essay.

This unit of study aims to provide an understanding of the anatomy of the viscera of the thorax, abdomen and pelvis. Structures covered include the heart and associated great vessels, lungs, mediastinum and the abdominal viscera, the alimentary organs and the genitourinary system. The structure of anterior thoracic and abdominal walls and pelvis along with the nerve supply to the viscera and relevant endocrine structures is also covered. Emphasis is placed on the relationship of structure to function especially with respect to the important functions of breathing, digestion, excretion and reproduction. Students will also be encouraged to relate their understanding of the structures studied to current research into these structures in related fields such as molecular biology and physiology.

Textbooks

Rohan, Yokochi and Lutjen-drecoll. Color Atlas of Human Anatomy.

ANAT 3008 **Musculoskeletal Anatomy**

6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Rachel Ward. **Session:** Semester 2. **Classes:** 2 lee, 2 x 2 hr tut/prac/wk. **Assumed Knowledge:** Some knowledge of basic mammalian biology. **Prerequisites:** ANAT2009 or ANAT2002 (for students who completed Intermediate study before 2005) or BMED2803 or BMED2804 orBMED2805 orBMED2806. **Prohibitions:** ANAT3005.. **Assessment:** One assignment, lhr prac exam, 1.5hr theory exam.

The unit provides an opportunity for students to study the topographical and systems anatomy of the upper limb, lower limb and the back regions. Emphasis is placed upon the identification and description of structures and the correlation of structure with function. This includes for the upper limb, its role in manipulation, for the lower limb standing and walking and for the back flexible support and protection. Emphasis is also given to the innervation of the limbs. The unit also aims to develop the general skills of observation, description, drawing, writing and discussion as applying to biological structure.

EMHU 3001 **Electron Microscopy and Imaging/Theory**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. Dr Anne Swan and Dr Alan Jones. **Session:** Semester 2. **Classes:** 4xlhr lec/wk, 1xlhr tut/wk. **Assumed Knowledge:** General concepts in Biology, and in Biochemistry or in Chemistry. **Prerequisites:** At least 12 cp of Intermediate Science units from any of the following:

Anatomy & Histology, Biochemistry, Biology, Chemistry, Mathematics, Microbiology, Molecular Biology & Genetics, Pharmacology, Physics, Physiology or Statistics.

For BMedSc students: either 36 cp of Intermediate units including BMed (2501, 2503 & 2505) or 42 cp of BMed Intermediate units including (2801, 2802, 2803 & 2806). **Assessment:** Two 1 hr exams, theoretical research assignment as a PowerPoint (TM) submission and presentation (10 min).

The course is run conjointly by the Department of Anatomy and Histology and the Electron Microscope Unit. The course will focus on the theoretical aspects of transmission and scanning electron microscopy, the preparation of biological samples for electron microscopy, digital imaging, and freeze-fracture. Immunological and other techniques required in modern research and hospital electron microscope laboratories will also be covered. Students will also receive theoretical training in laser scanning confocal microscopy including the use of fluorescent probes to visualize cellular organelles and cellular processes. Students will undertake a theoretical research project of their choice which is of relevance to the course.

Textbooks

Bozzola JJ and Russell LD. Electron Microscopy. 2nd Edn. Jones and Bartlett, Publishers. 1999.

Reference book: John C. Russ. The Image Processing Handbook. 3rd Edn, CRC Press, 1998.

EMHU 3002 **Electron Microscopy and Imaging/Prac**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc

(Adv), M B, B S, UG Study Abroad Program. Dr Anne Swan and Dr Alan Jones. **Session:** Semester 2. **Classes:** 2x2hr prac/wk & lx1hr tut/wk. **Assumed Knowledge:** General concepts in Biology, Histology and in
Biochemistry or in Chemistry. **Prerequisites:** 12 cp as follows: 6 cp from ANAT2008 OR 4 cp from ANAT2001 plus at least 6 cp OR 8 cp respectively of Intermediate Science units of study.
For BMedSci: Either 36 credit points of intermediate units including BMed (2501,2503 & 2505) or 42 credit points of BMed Intermediate units including BMed (2801, 2802, 2803 & 2806). **Corequisites:** EMHU3001. **Assessment:** 2xlhr exams, practical reports, practical project assignment by PowerPoint (TM) submission and presentation (10 min).
The course is run conjointly by the Department of Anatomy & Histology and the Electron Microscope Unit. The course will provide hands-on training in the operation of transmission and scanning electron microscopes, processing biological samples for electron microscopy, ultrathin sectioning, cryo-ultramicrotomy, freeze-fracture, electron diffraction, digital imaging, immunological and other techniques required in modern research and hospital electron microscope laboratories. Students will also learn the operation of laser scanning confocal microscopes, including the use of fluorescent probes to visualize cellular organelles and cellular processes. Students will apply their knowledge to complete a project of their choice on electron microscopy of a biological sample, from fixation of the sample to interpretation of the resulting electron micrographs.
Textbooks
Bozzola JJ and Russell LD. Electron Microscopy. 2nd Edn. Jones and Bartlett, Publishers. 1999.

HSTO 3001 **Microscopy & Histochemistry Theory**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Robin Arnold Prof. Chris Murphy. **Session:** Semester 1. **Classes:** Usually 4 lectures per week plus some tutorials - See timetable. **Assumed Knowledge:** Basic understanding of biology. **Prerequisites:** ANAT2008; BMED 2803 or 2804 or 2805 or 2806. **Corequisites:** HSTO3002. **Assessment:** One 2hr theory exam, 1 essay.
The aims of this unit of study are to provide a theoretical understanding of why biological tissues need to be specifically prepared for microscopic examination, how differing methods yield different types of morphological information; to allow students to study the theory of different types & modalities of microscopes, how they function & the differing information they provide; to develop an understanding of the theory of why biological material needs to be stained for microscopic examination; to allow students to understand how biological material becomes stained; to develop an understanding of the chemical information provided by biological staining - dyes, enzymes & antibodies.
Textbooks
Keirnan, J.A. Histological & Histochemical Methods 3rd Edition, 1999, Butterworth-Heinmann.

HSTO 3002 **Microscopy & Histochemistry Practical**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Robin Arnold Prof. Chris Murphy. **Session:** Semester 1. **Classes:** Usually 5.5 hours practical per week - see timetable. **Assumed Knowledge:** Basic understanding of biology. **Prerequisites:** ANAT200 8. **Corequisites:** HSTO3001. **Assessment:** 1.5 hr practical exam, 1 practical report.
The aims of this unit of study are to provide an practical understanding of why biological tissues need to be specifically prepared for microscopic examination, to apply different methods to gain different types of morphological information; to allow students to learn to use the different types & modalities of microscopes: to gain first hand experience of how they function & see for themselves the differing information they provide; to learn to stain biological material for microscopic examination; applying their theoretical knowledge & to allow students to develop practical skills in diverse histochemical staining procedures - dyes, enzymes & antibodies.
Textbooks
Keirnan, J.A. Histological & Histochemical Methods 3rd Edition, 1999, Butterworth-Heinmann.

HSTO 3003 **Cells and Development: Theory**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Frank Lovicu. **Session:** Semester 2. **Classes:** 4 x theory lectures per week, lh tutorial. **Assumed Knowledge:** (i) An understanding of the basic structure of vertebrates;
(ii) An understanding of elementary biochemistry and genetics. **Prerequisites:** For BSc students: ANAT 2008 or ANAT2001 and any one of the following intermediate MBLG units (2771, 2871, 2001, 2101, 2901).
For BMedSc students: 42 credit points of Intermediate BMED units, including: BMED2801,2802,2805. **Prohibitions:** ANAT3002. **Assessment:** lx 2hr exam, tutorial research papers.
The main emphasis of this unit of study concerns the mechanisms that control animal development. Fertilization, cleavage, gastrulation and the formation of the primary germ layers are described in a range of animals, mainly vertebrates. Much of the emphasis will be placed on the parts played by inductive cell and tissue interactions in cell and tissue differentiation, morphogenesis and pattern formation. This will be studied at both cellular and molecular levels.
Textbooks
Gilbert SF. Developmental Biology. (7th edn) Sinauer Associates Inc: Sunderland, Mass. 2003.

HSTO 3004 **Cells and Development: Practical (Adv)**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Frank Lovicu. **Session:** Semester 2. **Classes:** 1 tut, 2 x 2hr pracs/wk. **Prerequisites:** Note: This advanced unit of study is only available to select students who have achieved a mark of 65 or above in the following prerequisite units of study.
For BSc students:
ANAT 2008 or ANAT2001 and any one of the following intermediate MBLG units (2771,2871,2001,2101,2901).
For BMedSc students:
42 credit points of Intermediate BMED units, including: BMED2801, 2802, 2805. **Corequisites:** HSTO3003. **Prohibitions:** ANAT3002. **Assessment:** One lhr exam, Practical class reports.
This advanced unit of study complements HSTO3003 (Cells and Development:Theory) and is catered to provide students with laboratory research experience leading to Honours and higher degrees. It will primarily cover the design and application of experimental procedures involved in cell and developmental biology, using appropriate molecular and cellular techniques to answer developmental questions raised in HSTO3003. This unit of study will promote hands on experience with different animal models, allowing students to observe and examine developing and differentiating tissues at the macroscopic and microscopic level. The main emphasis of this unit of study will concentrate on practical approaches to understanding the mechanisms that control animal development. Fertilization, cleavage, gastrulation and the formation of the primary germ layers are covered. The parts played by inductive cell and tissue interactions in differentiation, morphogenesis and pattern formation are examined at cellular and molecular levels. Note that for some weeks of the course, specialised practical classes will be carried out at the Westmead campus.
Textbooks
Gilbert SF. Developmental Biology. (7th edn) Sinauer Associates Inc: Sunderland, Mass. 2003.

Anatomy and Histology Honours and Graduate Diploma
This unit of study provides the opportunity for the student to do research on a project supervised by a member of staff. Assessment is based on a thesis summarising the results of the year's research. To qualify for this unit of study the student must obtain an appropriate standard in Senior Anatomy or Histology or Neuroscience.

Anatomy and Histology Higher Degrees
The award courses of Master of Science and Doctor of Philosophy by research are offered in the Faculty of Science by the Department of Anatomy and Histology. The department also contributes to the teaching of the Graduate degrees in Applied Science (Neuroscience).

Biochemistry
The discipline teaches Biochemistry and Molecular Biology to Science and Medical Science students at the Junior, Intermediate and Senior levels. This discipline area includes the fundamental principles governing the structure, function and interactions of biological molecules, the nature of genetic material and control of its expression and leads to an understanding of the molecular nature of living systems. The Junior program has the introductory faculty Unit of Study Molecular Biology & Genetics Intro (MBLG 1001). The comprehensive Intermediate program in Biochemistry and Molecular Biology includes Protein Biochemistry (BCHM2071/2971), Human Biochemistry (BCHM2072/2972) and the faculty Unit of Study Molecular Biology & Genetics A (MBLG2071/2971). Students wishing to progress to the Senior units of study in Biochemistry and Molecular Biology need to have completed MBLG 1001 and 12 CP of Intermediate BCHM/MBLG Units of Study. The Senior program consists of Molecular Biology & Biochemistry - Genes (BCHM3071/3971), Molecular Biology & Biochemistry - Protein (BCHM3081/3981), Human Molecular Cell Biology (BCHM3072/3972), Medical and Metabolic Biochemistry, (BCHM3082/3982), Proteomics and Functional Genomics (BCHM3092/3992). Any four of these Units of Study constitute a major in Biochemistry. Students seeking further information should consult the relevant Tables earlier in this chapter as well as the degree information in Chapter 2 of this handbook.

Biochemistry Intermediate units of study

BCHM 2071 **Protein Biochemistry**
6 credit points. B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr Charles Collyer. **Session:** Semester 1. **Classes:** 2 lec/wk, 1 tut/fortnight, 4hr prac/fortnight. **Assumed Knowledge:** CHEM (1101 and 1102). **Prerequisites:** 12 credit points of Junior Chemistry plus MBLG 1001. **Corequisites:** Recommended concurrent units of study: intermediate MBLG for progression to Senior Biochemistry, and/or Intermediate Chemistry.. **Prohibitions:** BCHM2011 or BCHM2971. **Assessment:** One 2hr theory and theory of practical exam, 2 prac reports.

This unit of study introduces biochemistry by describing the physical and chemical activities of proteins and their functions in cells. The details of protein interactions with other cellular components are presented and the relationship of protein structure and function is discussed. Techniques in protein chemistry and analysis, including proteomics are introduced together with key experiments which reveal the physical basis of the functioning of proteins. This course builds on the protein science presented in MBLGlOOl and is ideally suited to students studying intermediate Chemistry together with Biochemistry. The practical course will nurture technical skills in biochemistry and will include protein preparation, the analysis of protein structure and enzymatic assays.

Textbooks

C.W. Pratt & K. Comely, Essential Biochemistry (John Wiley & Sons, 2004) and the Resource Manual for Biochemistry 2 Practical Sessions, Sem 1

BCHM 2971 **Protein Biochemistry (Advanced)**

6 credit points. B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr Charles Collyer. **Session:** Semester 1. **Classes:** 2 lee, 1 tut/fortnight, 4 hr prac/fortnight. **Prerequisites:** 12 credit points of Junior Chemistry and Distinction in MBLGlOOl. **Prohibitions:** BCHM2011, BCHM207L. **Assessment:** One 2hr theory and theory of practical exam, 2 prac reports.

This advanced unit of study introduces biochemistry by describing the physical and chemical activities of proteins and their functions in cells. The details of protein interactions with other cellular components are presented and the relationship of protein structure and function is discussed. Techniques in protein chemistry and analysis, including proteomics are discussed together with key experiments which reveal the physical basis of the functioning of proteins. This course builds on the protein science presented in MBLGlOOl and is ideally suited to students studying Intermediate Chemistry together with Biochemistry. The advanced practical course will nurture technical skills in protein biochemistry and will include protein preparation, the interpretation of protein structure, enzymatic assays and biochemical analysis.

Textbooks

C.W. Pratt & K. Comely, Essential Biochemistry (John Wiley & Sons, 2004) and the Resource Manual for Biochemistry 2 Practical Sessions, Sem 1

BCHM 2072 **Human Biochemistry**

6 credit points. B App Sc (Ex, SS and Nut), B App Sc (Ex &Sp Sc), B Sc (Nutr), B E, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. A/Prof Gareth Denyer. **Session:** Semester 2. **Classes:** 2 lee, 6 prac in alternate wks. **Prerequisites:** Either MBLGlOOl and 12 credit points of Junior Chemistry or either MBLG2071 or MBLG2971. **Prohibitions:** BCHM2972, BCHM2002, BCHM2102, BCHM2902, BCHM2112. **Assessment:** One 3 hr exam, practical reports.

This unit of study aims to describe how cells work at the molecular level, with special emphasis on human biochemistry. The chemical reactions which occur inside cells are described in the first series of lectures, Cellular Metabolism. Aspects of the molecular architecture of cells which enable them to transduce messages and communicate are described in the second half of the unit of study. At every stage, there is emphasis on the 'whole body' consequences of reactions, pathways and processes at the cellular level.

Cellular Metabolism describes how cells extract energy from fuel molecules like fatty acids and carbohydrates, how the body controls the rate of fuel utilization and how the mix of fuels is regulated (especially under different physiological circumstances such as starvation and exercise). The metabolic inter-relationships of the muscle, brain, adipose tissue and liver and the role of hormones in coordinating tissue metabolic relationships is discussed. The unit also discusses how the body lays down and stores vital fuel reserves such as fat and glycogen, how hormones modulate fuel partitioning between tissues and the strategies involved in digestion and absorption and transport of nutrients.

Signal Transduction covers how communication across membranes occurs (i.e. via surface receptors and signaling cascades). This allows detailed molecular discussion of the mechanism of hormone action and intracellular process targeting.

The practical component complements the lectures by exposing students to experiments which investigate the measurement of glucose utilization using radioactive tracers and the design of biochemical assay systems. During the unit of study, generic skills will be nurtured by frequent use of computers and problem solving activities. However, student exposure to generic skills will be extended by the introduction of exercises designed to teach oral communication, instruction writing and feedback articulation skills.

BCHM 2972 **Human Biochemistry (Advanced)**

6 credit points. B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. A/Prof Gareth Denyer. **Session:** Semester 2. **Classes:** 2 lee, 5 practicals incorporating tutorials in alternate weeks. **Prerequisites:** Distinction in one of (BCHM (2071 or 2971) or MBLG(2071 or 2971)) or (Distinction in MBLGlOOl and Distinction in 12 credit points of Junior Chemistry). **Prohibitions:** BCHM2072, BCHM2002, BCHM2102, BCHM2902, BCHM2112. **Assessment:** One 3 hr exam, practical reports.

This advanced unit aims to describe how cells work at the molecular level, with special emphasis on human biochemistry. The chemical reactions which occur inside cells are described in the first series of lectures, Cellular Metabolism. Aspects of the molecular architecture of cells which enable them to transduce messages and communicate are described in the second half of the unit of study. At every stage, there is emphasis on the 'whole body' consequences of reactions, pathways and processes at the cellular level.

Cellular Metabolism describes how cells extract energy from fuel molecules like fatty acids and carbohydrates, how the body controls the rate of fuel utilization and how the mix of fuels is regulated (especially under different physiological circumstances such as starvation and exercise). The metabolic inter-relationships of the muscle, brain, adipose tissue and liver and the role of hormones in coordinating tissue metabolic relationships is discussed. The unit also discusses how the body lays down and stores vital fuel reserves such as fat and glycogen, how hormones modulate fuel partitioning between tissues and the strategies involved in digestion and absorption and transport of nutrients.

Signal Transduction covers how communication across membranes occurs (i.e., via surface receptors and signaling cascades). This allows detailed molecular discussion of the mechanism of hormone action and intracellular process targeting.

The practical component complements the lectures by exposing students to experiments which investigate the measurement of glucose utilization using radioactive tracers and the design of biochemical assay systems. During the unit of study, generic skills will be nurtured by frequent use of computers and problem solving activities. However, student exposure to generic skills will be extended by the introduction of exercise designed to teach oral communication, instruction writing and feedback articulation skills

Biochemistry Senior units of study

BCHM 3071 **Molecular Biology & Biochemistry- Genes**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Mrs Jill Johnston, Prof Merlin Crossley. **Session:** Semester 1. **Classes:** 2hr lec/wk & 6hr prac/fortnight. **Prerequisites:** (MBLGlOOl and 12 CP of Intermediate BCHM) or (MBLG2771/2871 and (6CP of Intermediate BCHM units or MBLG 2072/2972)) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804). **Prohibitions:** BCHM3971, BCHM3001, BCHM3901. **Assessment:** One 2.5hr exam, prac work.

NB: From 2007 the prerequisites will be :
MBLGlOOl and 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, including BMED2802 andBMED2804

This unit of study is designed to provide a comprehensive coverage of the activity of genes in living organisms, with a focus on eukaryotic and particularly human systems. The lecture component covers the arrangement and structure of genes, how genes are expressed, promoter activity and enhancer action. This leads into discussions on the biochemical basis of differentiation of eukaryotic cells, the molecular basis of imprinting, epigenetics, and the role of RNA in gene expression. Additionally, the course discusses the effects of damage to the genome and mechanisms of DNA repair. The modern techniques for manipulating and analysing macromolecules such as DNA and proteins and their relevance to medical and biotechnological applications are discussed. Techniques such as the generation of gene knockout and transgenic mice are discussed as well as genomic methods of analysing gene expression patterns. Particular emphasis is placed on how modern molecular biology and biochemical methods have led to our current understanding of the structure and functions of genes within the human genome. The practical course is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in molecular biology laboratories.

Textbooks

Lewin B Essential Genes (Prentice-Hall, 2006).

BCHM 3971 **Molecular Biology & Biochem- Genes (Adv)**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Mrs Jill Johnston, Prof Merlin Crossley. **Session:** Semester 1. **Classes:** 2hr lec/wk & 6hr prac/fortnight. **Prerequisites:** (MBLGlOOl and Distinction in 12 CP of Intermediate BCHM) or (Distinction in MBLG2771/2871 and Distinction in 6CP of Intermediate BCHM units or MBLG 2072/2972) or (42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804). **Prohibitions:** BCHM3071, BCHM3001, BCHM3901. **Assessment:** One 2.5 hr exam, prac work.

NB: From 2007 the prerequisites will be :
MBLGlOOl and Distinction in 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804

This unit of study is designed to provide a comprehensive coverage of the activity of genes in living organisms, with a focus on eukary otic and particularly human systems. The lecture component covers the arrangement and structure of genes, how genes are expressed, promoter activity and enhancer action. This leads into discussions on the biochemical basis of differentiation of eukaryotic cells, the molecular basis of imprinting, epigenetics, and the role of RNA in gene expression. Additionally, the course discusses the effects of damage to the genome and mechanisms of DNA repair. The modern techniques for manipulating and analysing macromolecules such as DNA and proteins and their relevance to medical and biotechnological applications are discussed. Techniques such as the generation of gene knockout and transgenic mice are discussed as well as genomic methods of analysing gene expression patterns. Particular emphasis is placed on how modern molecular biology and biochemical methods have led to our current understanding of the structure and functions of genes within the human genome. The practical course is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in molecular biology laboratories.
The lecture component of this unit of study is the same as BCHM3071. Qualified students will attend seminars/practical classes in which more sophisticated topics in gene expression and manipulation will be covered.
Textbooks
Lewin B Essential Genes (Prentice-Hall, 2006).

BCHM 3072 **Human Molecular Cell Biology**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Mrs Jill Johnston, Prof Iain Campbell. **Session:** Semester 2. **Classes:** 2hr lec/wk & 6hr prac/fortnight. **Prerequisites:** (MBLGlOOl and 12 CP of Intermediate BCHM) or (MBLG2771/2871 and 6CP of Intermediate BCHM units or MBLG 2072/2972) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804). **Prohibitions:** BCHM3972, BCHM3002, BCHM3902, BCHM3004, BCHM3904. **Assessment:** One 2.5hr exam, prac work.
NB: From 2007 the prerequisites will be :
MBLGlOOl and 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, including BMED2802 and BMED2804
This unit of study will explore the responses of cells to changes in their environment in both health and disease. The lecture course consists of three integrated modules. The first will provide an overview of the role of signalling mechanisms in the control of human cell biology and then focus on cell surface receptors and the downstream signal transduction events that they initiate. The second will examine how cells detect and respond to pathogenic molecular patterns displayed by infectious agents and injured cells by discussing the roles of relevant cell surface receptors, cytokines and signal transduction pathways. The third will consider life, death and differentiation of human cells in response to intra-cellular and extra-cellular signals by discussing the eukaryotic cell cycle under normal and pathological circumstances and programmed cell death in response to abnormal extra-cellular and intra-cellular signals. In all modules emphasis will be placed on the molecular processes involved in human cell biology, how modern molecular and cell biology methods have led to our current understanding of them and the implications of them for pathologies such as cancer. The practical component is designed to complement the lecture course, providing students with experience in a wide range of techniques used in modern molecular cell biology.
Textbooks
Alberts B et al Molecular biology of the cell (4th edition, Garland Science, 2002)

BCHM 3972 **Human Molecular Cell Biology (Advanced)**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Mrs Jill Johnston, Prof Iain Campbell. **Session:** Semester 2. **Classes:** 2hr lec/wk & 6hr prac/fortnight. **Prerequisites:** (MBLGlOOl and Distinction in 12 CP of Intermediate BCHM) or (Distinction in MBLG2771/2871 and Distinction in 6CP of Intermediate BCHM units or MBLG 2072/2972) or (42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804). **Prohibitions:** BCHM3072, BCHM3002, BCHM3004, BCHM3902, BCHM3904.. **Assessment:** One 2.5hr exam, prac work.
NB: From 2007 the prerequisites will be :
MBLGlOOl and Distinction in 12 CP of Intermediate BCHM/MBLG units or42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804
This unit of study will explore the responses of cells to changes in their environment in both health and disease. The lecture course consists of three integrated modules. The first will provide an overview of the role of signalling mechanisms in the control of human cell biology and then focus on cell surface receptors and the downstream signal transduction events that they initiate. The second will examine how cells detect and respond to pathogenic molecular patterns displayed by infectious agents and injured cells by discussing the roles of relevant cell surface receptors, cytokines and signal transduction pathways. The third will consider life, death and differentiation of human cells in response to intra-cellular and extra-cellular signals by discussing the eukaryotic cell cycle under normal and pathological circumstances and programmed cell death in response to abnormal extra-cellular and intra-cellular signals. In all modules emphasis will be placed on the molecular processes involved in human cell biology, how modern molecular and cell biology methods have led to our current understanding of them and the implications of them for pathologies such as cancer. The practical component is designed to complement the lecture course, providing students with experience in a wide range of techniques used in modern molecular cell biology.
The lecture component of this unit of study is the same as BCHM3072. Qualified students will attend seminars/practical classes in which more sophisticated topics in gene expression and manipulation will be covered.
Textbooks
Alberts B et al Molecular biology of the cell (4th edition, Garland Science, 2002)

BCHM 3081 **Mol Biology & Biochemistry- Proteins**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Mrs Jill Johnston, Dr Simon Easterbrook-Smith. **Session:** Semester 1. **Classes:** 2hr lec/wk & 6hr prac/fortnight. **Prerequisites:** (MBLGlOOl and 12 CP of Intermediate BCHM) or (MBLG2771/2871 and (6CP of Intermediate BCHM units or MBLG 2072/2972)) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804). **Prohibitions:** BCHM3981, BCHM3001, BCHM3901.. **Assessment:** One 2.5hr exam, prac work.
NB: From 2007 the prerequisites will be :
MBLGlOOl and 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, including BMED2802 andBMED2804
This unit of study is designed to provide a comprehensive coverage of the functions of proteins in living organisms, with a focus on eukaryotic and particularly human systems. Its lecture component deals with how proteins adopt their biologically active forms, including discussions of protein structure, protein folding and how recombinant DNA technology can be used to design novel proteins with potential medical or biotechnology applications. Particular emphasis is placed on how modern molecular biology and biochemical methods have led to our current understanding of the structure and functions of proteins. It also covers physiologically and medically important aspects of proteins in living systems, including the roles of chaperones in protein folding inside cells, the pathological consequences of misfolding of proteins, how proteins are sorted to different cellular compartments and how the biological activities of proteins can be controlled by regulated protein degradation. The practical course is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in molecular biology and protein biochemistry laboratories.
Textbooks
Lesk, A Introduction to Protein Science (Oxford University Press, 2004)

BCHM 3981 **Mol Biology & Biochemistry- Proteins Adv**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Mrs Jill Johnston, Dr Simon Easterbrook-Smith. **Session:** Semester 1. **Classes:** 2hr lec/wk & 6hr prac/fortnight. **Prerequisites:** (MBLGlOOl and Distinction in 12 CP of Intermediate BCHM) or (Distinction in MBLG2771/2871 and Distinction in 6CP of Intermediate BCHM units or MBLG 2072/2972) or (42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804). **Prohibitions:** BCHM3081, BCHM3001, BCHM3901. **Assessment:** One 2.5hr exam, prac work.
NB: From 2007 the prerequisites will be :
MBLGlOOl and Distinction in 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804
This unit of study is designed to provide a comprehensive coverage of the functions of proteins in living organisms, with a focus on eukaryotic and particularly human systems. Its lecture component deals with how proteins adopt their biologically active forms, including discussions of protein structure, protein folding and how recombinant DNA technology can be used to design novel proteins with potential medical or biotechnology applications. Particular emphasis is placed on how modern molecular biology and biochemical methods have led to our current understanding of the structure and functions of proteins. It also covers physiologically and medically important aspects of proteins in living systems, including the roles of chaperones in protein folding inside cells, the pathological consequences of misfolding of proteins, how proteins are sorted to different cellular compartments and how the biological activities of proteins can be controlled by regulated protein degradation. The practical course is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in molecular biology and protein biochemistry laboratories.
The lecture component of this unit of study is the same as BCHM3081. Qualified students will attend seminars/practical classes

in which more sophisticated topics in gene expression and manipulation will be covered.
Textbooks
Lesk, A Introduction to Protein Science (Oxford University Press, 2004)

BCHM 3082 **Medical and Metabolic Biochemistry**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Mrs Jill Johnston, Prof Philip Kuchel. **Session:** Semester 2. **Classes:** 2hr lec/wk & 6hr prac/fortnight. **Prerequisites:** (MBLGlOOl and 12 CP of Intermediate BCHM) or (MBLG2771/2871 and (6CP of Intermediate BCHM units or MBLG 2072/2972)) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804). **Prohibitions:** BCHM3982, BCHM3002, BCHM3004, BCHM3902, BCHM3904.. **Assessment:** One 2.5hr exam, prac work.
NB: From 2007 the prerequisites will be :
MBLGlOOl and 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, including BMED2802 andBMED2804
This unit of study will explore the biochemical processes involved in the operation of cells and how they are integrated in tissues and in the whole human body in normal and diseased states. These concepts will be illustrated by considering whole-body aspects of energy utilization, fat and glycogen storage and their regulation under normal conditions compared to obesity and diabetes. Key concepts that will be discussed include energy balance, regulation of metabolic rate, control of food intake, tissue interactions in fuel selection, the role of adipose tissue and transport of fuel molecules from storage organs and into cells. Particular emphasis will be placed on how the modern concepts of metabolomics, coupled with new methods, including magnetic resonance techniques, molecular biology methods and microarray technologies, as well as studies of the structure and function of enzymes, have led to our current understanding of how metabolic processes are normally integrated and how they become deranged in disease states. The practical component is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in modern medical and metabolic biochemistry.

BCHM 3982 **Medical and Metabolic Biochemistry (Adv)**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Mrs Jill Johnston, Prof Philip Kuchel. **Session:** Semester 2. **Classes:** 2 hr lec/wk & 6hr prac/fortnight. **Prerequisites:** (MBLGlOOl and Distinction in 12 CP of Intermediate BCHM) or (Distinction in MBLG2771/2871 and Distinction in 6CP of Intermediate BCHM units or MBLG 2072/2972) or (42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804). **Prohibitions:** BCHM3082, BCHM3002, BCHM3004, BCHM3902, BCHM3904.. **Assessment:** One 2.5hr exam, prac work.
NB: From 2007 the prerequisites will be :
MBLGlOOl and Distinction in 12 CP of Intermediate BCHM/MBLG units or42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804
This unit of study will explore the biochemical processes involved in the operation of cells and how they are integrated in tissues and in the whole human body in normal and diseased states. These concepts will be illustrated by considering whole-body aspects of energy utilization, fat and glycogen storage and their regulation under normal conditions compared to obesity and diabetes. Key concepts that will be discussed include energy balance, regulation of metabolic rate, control of food intake, tissue interactions in fuel selection, the role of adipose tissue and transport of fuel molecules from storage organs and into cells. Particular emphasis will be placed on how the modern concepts of metabolomics, coupled with new methods, including magnetic resonance techniques, molecular biology methods and microarray technologies, as well as studies of the structure and function of enzymes, have led to our current understanding of how metabolic processes are normally integrated and how they become deranged in disease states. The practical component is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in modern medical and metabolic biochemistry.
The lecture component of this unit of study is the same as BCHM3082. Qualified students will attend seminars/practical classes in which more sophisticated topics in gene expression and manipulation will be covered.

BCHM 3092 **Proteomics and Functional Genomics**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr Stuart Cordwell, Mrs Jill Johnston. **Session:** Semester 2. **Classes:** 2 hr lec/wk & 3hr prac/week. **Prerequisites:** (MBLGlOOl and 12 CP of Intermediate BCHM) or (MBLG2771/2871 and (6CP of Intermediate BCHM units or MBLG 2072/2972)) or (42CP of Intermediate BMedSc units, including BMED2802 and BMED2804). **Prohibitions:** BCHM3992, BCHM3098. **Assessment:** One 2.5hr exam, prac work.
NB: From 2007 the prerequisites will be :
MBLGlOOl and 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, including BMED2802 andBMED2804
This unit of study will focus on the high throughput methods for the analysis of gene structure and function (genomics) and the analysis of proteins (proteomics), which are at the forefront of discovery in the biomedical sciences. The course will concentrate on the hierarchy of gene-protein-structure-function through an examination of modern technologies built on the concepts of genomics versus molecular biology, and proteomics versus biochemistry. Technologies to be examined include DNA sequencing, nucleic acid and protein microarrays, two-dimensional gel electrophoresis of proteins, uses of mass spectrometry for high throughput protein identification, isotope tagging for quantitative proteomics, high-performance liquid chromatography, high-throughput functional assays, affinity chromatography and modern methods for database analysis. Particular emphasis will be placed on how these technologies can provide insight into the molecular basis of changes in cellular function under both physiological and pathological conditions as well as how they can be applied to biotechnology for the discovery of biomarkers, diagnostics, and therapeutics. The practical component is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in proteomics and genomics.
Textbooks
Liebler, Daniel C. Introduction to proteomics : tools for the new biology (Humana Press, 2002)

BCHM 3992 **Proteomics and Functional Genomics (Adv)**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr Stuart Cordwell, Mrs Jill Johnston. **Session:** Semester 2. **Classes:** 2 hr lec/wk & 3hr prac/fortnight. **Prerequisites:** (MBLGlOOl and Distinction in 12 CP of Intermediate BCHM) or (Distinction in MBLG2771/2871 and Distinction in 6CP of Intermediate BCHM units or MBLG 2072/2972) or (42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804). **Prohibitions:** BCHM3092, BCHM3098. **Assessment:** One 2.5hr exam, prac work.
NB: From 2007 the prerequisites will be :
MBLGlOOl and Distinction in 12 CP of Intermediate BCHM/MBLG units or 42CP of Intermediate BMedSc units, with Distinction in BMED2802 and BMED2804
This unit of study will focus on the high throughput methods for the analysis of gene structure and function (genomics) and the analysis of proteins (proteomics) which are at the forefront of discovery in the biomedical sciences. The course will concentrate on the hierarchy of gene-protein-structure-function through an examination of modern technologies built on the concepts of genomics versus molecular biology, and proteomics versus biochemistry. Technologies to be examined include DNA sequencing, nucleic acid and protein microarrays, two-dimensional gel electrophoresis of proteins, uses of mass spectrometry for high throughput protein identification, isotope tagging for quantitative proteomics, high-performance liquid chromatography, high-throughput functional assays, affinity chromatography and modern methods for database analysis. Particular emphasis will be placed on how these technologies can provide insight into the molecular basis of changes in cellular function under both physiological and pathological conditions as well as how they can be applied to biotechnology for the discovery of biomarkers, diagnostics, and therapeutics. The practical component is designed to complement the lecture course and will provide students with experience in a wide range of techniques used in proteomics and genomics.
The lecture component of this unit of study is the same as BCHM3092. Qualified students will attend seminars/practical classes in which more sophisticated topics in gene expression and manipulation will be covered.
Textbooks
Liebler, Daniel C. Introduction to proteomics : tools for the new biology (Humana Press, 2002)

Biochemistry Honours

Dr Easterbrook-Smith, Biochemistry Staff
An Honours program of study designed for those wishing to enter research or to undertake work leading to a higher degree is conducted in the fourth year. The program runs from early February until mid-November (mid year entry is not normally available). It provides the opportunity for research on a project supervised by a particular staff member, as well as the study of advanced and developing aspects of Biochemistry. During the year each student is required to write one essay, for which there is a choice of topics. Assessment of the year's work is based largely on the student's performance on the research project, and a written report on the project. During the second semester of the Senior Biochemistry units of study students are invited to apply for permission to enrol in the Honours units of study and are provided with a list of possible research projects. Potential research topics currently offered to students include:
- Anticancer drugs: synthesis and mechanism of action.
- Biochemistry of cellular signal transduction
- The causes of diabetes and/or obesity
- Chaperones and amyloid formation
- X-ray crystallography of proteins and drug DNA complexes
- NMR studies of the solution structure of DNA binding proteins

- NMR studies of membrane transport and metabolism in cells
- Eukaryotic transcription factors
- Proteomics
- Bioinformatics
- Protein structure modeling
- Mass Spectroscopy
- Genomics
- Molecular biology of humans and yeasts
- Gene expression in transgenic mice
- Glycaemic index of foods; oligosaccharides in human milk.

Students must arrange to speak with potential supervisors. An application form is attached to the list of possible research projects provided to students or is available from the Honours coordinator and they are asked to provide the names of at least four supervisors in order of preference. A decision on the Honours intake is made before Christmas. An attempt is made to assign students to the supervisor of their choice but this will not always be possible. In difficult cases there is further discussion with the student.

The usual requirement for acceptance into the Honours program is a pass at the Credit level in 12 credit points of Senior Biochemistry. Additionally, strong students with relevant training (ie. Chemistry, Biology or Medical Sciences) may be admitted by permission of the Head of School. It should be noted that the number of students accepted into the Honours program may be limited because of resource restrictions (eg, availability of a supervisor and/or laboratory space) and that, in the event of there being more applicants than resources will allow, offers will be made on the basis of academic merit. The Honours unit of study codes are listed in the Honours Table at the end of this chapter.

Bioinformatics

Bioinformatics is an interdisciplinary area of science, involving Computer Science, Computational Science, Mathematics, Statistics, and the Life Sciences (ie. biology, medicine, etc.). It is responsible for the development and use of computer systems, databases, software, networks, and hardware to solve scientific problems in a wide variety of areas ranging from biology to medicine.

Due to its interdisciplinary nature, the BSc (Bioinformatics) degree is composed of units of study that are offered also to students enrolled in other degrees, the general aim being to equip the students enrolled in the BSc (Bioinformatics) degree with knowledge in key areas of relevance to Bioinformatics. In the first year of their study, students devote time to units of study offered by the School of Biological Sciences, School of Chemistry, School of Information Technologies, School of Mathematics and Statistics, and School of Molecular and Microbial Biosciences (see Table 1A).

In the second and third year of their study, students divide time equally between the Life Sciences and the mathematical, statistical, and computational sciences, choosing units of study from those offered by the School of Biological Sciences, School of Information Technologies, School of Mathematics and Statistics, School of Molecular and Microbial Biosciences, School of Physics, and the Department of Pharmacology (see Table 1A).

In the third year of their study, the students are highly recommended to enrol in BIOL3 027/3 927 (Bioinformatics and Genomics) and BCHM3092/3992 (Proteomics and Functional Genomics). Furthermore, the students complete a unit of study - BINF3101 (Bioinformatics Project) - that is designed specifically to give them an opportunity to do real research, supervised by scientists from the biomedical disciplines. For further information regarding third year requirements see Table 1A.

Biological Sciences

Advice on units of study

Members of the Biology staff are normally present among Faculty Advisers during enrolment week. Any student needing advice before enrolling should make an appointment to see a Departmental adviser from the School of Biological Sciences.

Assistance during semester

The offices of Junior year Biology staff are on the 5th floor of Carslaw.

Summer School: January-February.

The School of Biological Sciences offers some units of study in The Sydney Summer School. Consult The Sydney Summer School website for more information: www.summer.usyd.edu.au

BIOL 1001 **Concepts in Biology**

6 credit points. B A, B Agr Ec, B An Vet Bio Sc, B Anim Sc, B E, B Hort Sc, B L W Sc, B Med Sc, B N, B N (I A H), B N, B A, B N, B Sc, B Pharm, B Pharm (Rural), B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Gene. **Session:** Semester 1, Summer. **Classes:** 3 lee & 3 hrs prac/wk. **Assumed Knowledge:** No previous knowledge required. Students are encouraged to take the Biology Bridging Course. Students who have completed HSC Biology are advised to enrol in BIOL1101 Ecosystems to Genes rather than BIOL 1001. **Prohibitions:** BIOL (1101 or 1901). **Assessment:** One 2.5hr exam, assignments, quizzes.

NB: It is recommended that BIOL (1001 or 1101 or 1901) be taken before all Semester 2 Junior units of study in Biology.

Concepts in Biology is an introduction to the major themes of modern biology. We start with introductory cell biology, which particularly emphasises how cells obtain and use energy. We then discuss the structure and function of microorganisms. The significance of molecular biology is covered, working from the role of DNA in protein synthesis and development through to modern techniques and their uses. The genetics of organisms is then discussed, leading to consideration of theories of evolution and the origins of the diversity of modern organisms. We bring all the abovementioned concepts together to develop an understanding of interactions between organisms in biological communities or ecosystems. Finally we discuss the significance of human impact on other living organisms, with particular reference to finding solutions to problems in areas such as global warming, introduced pests, and extinctions. The unit is designed so that lab classes and the field trip integrate with the lectures. Lab activities are carried out in groups so that team work skills are developed. This unit also incorporates a number of key generic skills such as written communication skills, discussion and data interpretation, and experimental design and hypothesis testing skills.

Textbooks

Knox R B, Ladiges P and Evans B, (2005) Biology, 3rd Ed. McGraw-Hill

A Unit of Study Manual will be available for purchase from the Copy Centre during the first week of semester.

BIOL 1101 **Biology - Ecosystems to Genes**

6 credit points. B A, B Agr Ec, B An Vet Bio Sc, B E, B Hort Sc, B L W Sc, B Med Sc, B N, B N (I A H), B N, B A, B N, B Sc, B Pharm, B Pharm (Rural), B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc. **Session:** Semester 1. **Classes:** 3 lee & 2-3 hrs. prac/wk. **Prerequisites:** HSC 2-unit Biology or equivalent. **Prohibitions:** BIOL (1001 or 1901). **Assessment:** One 2.5hr exam, assignments, quizzes.

NB: It is recommended that BIOL (1001 or 1101 or 1901) be taken before all Semester 2 Junior units of study in Biology.

Biology - Ecosystems to Genes builds on the main themes introduced in HSC 2-unit Biology to provide a background to the breadth of biology, including: cell biology, with emphasis on how cells obtain and use energy; diversity of microorganisms; genetics of organisms; modern molecular biology; theories of evolution and the origins of diversity of modern organisms; and interactions between organisms in biological communities.

Textbooks

Knox R B, Ladiges P and Evans B (2005) Biology., 3rd Ed., McGraw-Hill

A Unit of Study Manual will be available for purchase from the Copy Centre during the first week of semester.

BIOL 1901 **Biology - Ecosystems to Genes (Advanced)**

6 credit points. B A, B Agr Ec, B An Vet Bio Sc, B Hort Sc, B L W Sc, B Med Sc, B N, B N (I A H), B N, B A, B N, B Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), B Sc Agr. **Session:** Semester 1. **Classes:** 3 lee & 3 hrs prac/wk. **Prerequisites:** UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. **Prohibitions:** BIOL (1001 or 1101). **Assessment:** One 2.5hr exam, assignments, quizzes.

NB: Department permission required for enrolment. It is recommended that BIOL (1001 or 1101 or 1901) be taken before all Semester 2 Junior units of study in Biology.

This unit of study shares lectures and practical classes with BIOL1101 but also includes more demanding alternative components of Biology - Ecosystems to Genes.

Textbooks

AsforBIOL1101.

A Unit of Study Manual will be available for purchase from the Copy Centre during the first week of semester.

BIOL 1002 **Living Systems**

6 credit points. B A, B Agr Ec, B An Vet Bio Sc, B Hort Sc, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Nutrition), B Sc Agr, UG Study Abroad Program. **Session:** Semester 2. **Classes:** (3 lee & 2 h prac)/wk. **Assumed Knowledge:** HSC 2-unit Biology. Students who have not undertaken an HSC biology course are strongly advised to complete Biology Bridging Course before lectures commence. **Prohibitions:** BIOL 1902. **Assessment:** One 2.5hr exam, assignments, classwork.

Living 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 unit of study 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. Finally applications of knowledge of genetics and ecology to practical problems in agriculture and conservation are intro-

duced. It is recommended that BIOL (1001 or 1101 or 1901) be taken before this unit of study. This unit of study, together with BIOL (1001 or 1101 or 1901) provides entry to all Intermediate units of study in biology in the School of Biological Sciences.
Textbooks
Knox R B, Ladiges P and Evans B (2005) Biology., 3rd Ed., McGraw-Hill.
A Unit of Study Manual will be available for purchase from the Copy Centre during the first week of semester.

BIOL 1902 **Living Systems (Advanced)**

6 credit points. B A, B Agr Ec, B An Vet Bio Sc, B Hort Sc, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), B Sc Agr. **Session:** Semester 2. **Classes:** (3 lee & 2 h prac)/wk. **Prerequisites:** UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. **Prohibitions:** BIOL (1002 or 1904 or 1905). **Assessment:** One 2.5hr exam, assignments, quizzes, independent project.
NB: Department permission required for enrolment.
This unit of study shares lectures and practical classes with BIOL 1002 but also includes more demanding alternative components of Living Systems
Textbooks
As for BIOL 1002.
A Unit of Study Manual will be available for purchase from the Copy Centre during the first week of semester,

BIOL 1003 **Human Biology**

6 credit points. B A, B Agr Ec, B E, B Med Sc, B N, B N (I A H), B N, B A, B N, B Sc, B Pharm, B Pharm (Rural), B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 2, Summer. **Classes:** Two or three, one hour lectures per week (3 lectures in weeks 1 and 13) plus 1 hour per lecture of independent study. Two 3 hour laboratory sessions every three weeks, plus 6-9 hours HBOnline work every three weeks covering online practical activities, prework and homework. **Assumed Knowledge:** HSC 2-unit Biology. **Prohibitions:** BIOL 1903 or EDUH1016. **Assessment:** One 2.5hr exam, assignment, poster and quizzes.
This Unit of Study has three main components: lectures, practicals and HBOnline activities. The unit of study provides an introduction to human evolution and ecology, cell biology, physiology and anatomy, through both lectures and practical work. It begins with human evolution, human population dynamics and the impact of people on the environment. The unit of study includes human nutrition, distribution of essential requirements to and from cells, control of body functions and defence mechanisms. After discussion of reproduction and development, it concludes with modern studies and research prospects in biotechnology and human genetics. It is recommended that BIOL (1001 or 1101 or 1901) be taken before this unit of study. Enrolment may be restricted by the availability of places. This unit of study, together with BIOL (1001 or 1101 or 1901), provides entry to Intermediate units of study in Biology, but the content of BIOL (1002 or 1902) is assumed knowledge for BIOL (2011 or 2012) and PLNT (2002 or 2003) and students entering from BIOL (1003 or 1903) will need to do some preparatory reading.
Textbooks
Seeley, R., Stephens, T.D. & Tate, P. (2005) Essentials of Human Anatomy and Physiology, McGraw Hill which comes with a custom publication of Mader, SS (2004) Human Biology, 8th Ed., McGraw-Hill.
The Course Reader will be available for purchase from the Copy Centre during the first week of Semester.

BIOL 1903 **Human Biology (Advanced)**

6 credit points. B A, B Agr Ec, B Med Sc, B N, B N (I A H), B N, B A, B N, B Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 2. **Classes:** Two or three, one hour lectures per week (3 lectures in weeks 1 and 13) plus 1 hour per lecture of independent study. Two 3 hour laboratory sessions every three weeks, plus 6-9 hours HBOnline work every three weeks covering online practical activities, prework and homework. **Prerequisites:** UAI of at least 93 and HSC Biology result in the 90th percentile or better, or Distinction or better in a University level Biology unit, or by invitation. **Prohibitions:** BIOL (1003 or 1904 or 1905) or EDUH1016. **Assessment:** One 2.5hr exam, assignment, quizzes.
NB: Department permission required for enrolment.
This unit of study is the same as BIOL 1003 except for the addition of 3 special seminars from guest speakers, a three hour ethics and bioscience component and three student peer group case study presentations.
Textbooks
As for BIOL 1003
A Unit of Study Manual will be available for purchase from the Copy Centre during the first week of semester.

Biology Intermediate units of study

Students who wish to take Intermediate Biology units of study should obtain Information for Students Considering Intermediate Biology Units of Study from the School Office (Science Rd Cottage, A10). Students should discuss their preferences, together with the other units of study they propose to study, with a Biology staff member before enrolling.

If you are considering going on to study Senior Biology you must satisfy the Intermediate qualifying and prerequisite units of study for the Senior units of study you intend taking.
MBLG (2071 or 2971) and MBLG (2072 or 2972) are highly recommended to be taken by Science students in combination with all 6 credit point Intermediate Biology units of study, and are qualifying units for BIOL (3018, 3025, 3026, 3027). Note that MBLG (2071 or 2971) is a prerequisite for students wishing to enrol in MBLG (2072 or 2972). See entry for MBLG 2071, 2971, 2072 and 2972 under the heading Molecular Biology and Genetics.
The following eight Intermediate units of study are offered:
Semester One
- BIOL 2011 Invertebrate Zoology
- BIOL 2911 Invertebrate Zoology (Advanced)
-BIOL 2016 Cell Biology
- BIOL 2916 Cell Biology (Advanced)
- PLNT 2001 Applied Plant Biochemistry
- PLNT 2901 Applied Plant Biochemistry (Advanced)
- PLNT 2002 Aust Flora: Ecology and Conservation
- PLNT 2902 Aust Flora: Ecology & Conservation (Adv)

Semester Two
- BIOL 2012 Vertebrates and their Origins
- BIOL 2912 Vertebrates and their Origins (Advanced)
-BIOL 2017 Entomology
- PLNT 2003 Plant Form and Function
- PLNT 2903 Plant Form and Function (Advanced)
- MBLG 2072 Molecular Biology and Genetics B
- MBLG 2972 Molecular Biology and Genetics B (Advanced)

Only one component of each of the above listed Intermediate units of study may be credited towards the degree. Qualifying units of study for certain Senior Biology units of study are defined as combinations of 6 credit points of Intermediate Biology units of study (see the Senior unit of study descriptions or Information for Students booklets). For details of PLNT units please refer to the Plant Science entry in this chapter.

BIOL 2011 **Invertebrate Zoology**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr E L May. **Session:** Semester 1. **Classes:** (2 lee, 1 tut, 2 prac)/wk or (3 lee, 2 prac)/wk. **Assumed Knowledge:** The content of BIOL (1002 or 1902) is assumed knowledge and students entering from BIOL (1003 or 1903) will need to do some preparatory reading. **Prerequisites:** BIOL (1001 or 1101 or 1901) and (either BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016 (for BEd (Secondary) (Human Movement and Health Education))) and 12 credit points of Junior Chemistry. For students in BSc (Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. **Prohibitions:** BIOL (2001 or 2101 or 2901 or 2911). **Assessment:** Mid-semester test, one 2hr theory exam, one 1.5hr prac exam, one essay, tutorial work.
NB: The completion of 6 credit points of MBLG units of study is highly recommended.
This unit of study provides a thorough grounding in the diversity of animals by lectures and detailed laboratory classes, which include dissections and demonstrations of the functional anatomy of invertebrates. The material is presented within the conceptual framework of evolution and the principles and use of phylogeny and classification. Tutorials further explore concepts of phylogeny, animal structure and function, and provide opportunity to develop oral and written communication skills. The unit of study is designed to be taken in conjunction with BIOL2012 Vertebrates and their Origins; the two units of study together provide complete coverage of the diversity of animals at the level of phylum. This unit of study may be taken alone, but when taken with BIOL2012 provides entry into certain Senior Biology units of study.

BIOL 2911 **Invertebrate Zoology (Advanced)**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr E May. **Session:** Semester 1. **Prerequisites:** Distinction average in BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016.
12 credit points of Junior Chemistry (or for BSc (Marine Science) students 6 credit points of Junior Chemistry and 6 credit points of Junior Physics). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibitions:** BIOL (2001 or 2101 or 2011 or 2901)..
NB: The completion of 6 credit points of MBLG units of study is highly recommended.
Qualified students will participate in alternative components of BIOL 2011 Invertebrate Zoology. The content and nature of these components may vary from year to year.

BIOL 2012 **Vertebrates and their Origins**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr E L May. **Session:** Semester 2. **Classes:** (2 lee, 1 tut, 2 prac)/wk or (3 lee, 2 prac)/wk, one field trip. **Assumed Knowledge:** The content of BIOL (1002 or 1902) is assumed knowledge and students entering from BIOL (1003 or 1903) will need to do some preparatory reading. **Prerequisites:** BIOL (1001 or 1101 or 1901) and (either BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016 (for BEd (Secondary) (Human Movement and

Health Education))) and 12 credit points of Junior Chemistry. For students in BSc (Marine Science) stream: 6 credit points of Junior Chemistry and 6 credit points of Junior Physics. **Prohibitions:** BIOL (2002 or 2102 or 2912 or 2902). **Assessment:** Mid-semester test, one 2hr theory exam, one 1.5hr prac exam, one assignment, one essay, tutorial work.
NB: The completion of 6 credit points ofMBLG units of study is highly recommended.
This unit of study completes the grounding in the diversity of animals at the level of phylum introduced in BIOL2011 Invertebrate Zoology, by lectures and detailed laboratory classes, which include dissections and demonstrations of the functional anatomy of vertebrates and invertebrate phyla not covered in BIOL2011. Tutorials further explore concepts of phylogeny, animal structure and function, and provide opportunity to develop oral and written communication skills. Students may choose to attend an intensive 3.5 day field trip.

BIOL 2912 **Vertebrates and their Origins (Advanced)**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr E May. **Session:** Semester 2. **Prerequisites:** Distinction average in BIOL (1001 or 1101 or 1901) and either one of BIOL (1002 or 1902 or 1003 or 1903) or EDUH1016.
12 credit points of Junior Chemistry (or for BSc (Marine Science) students 6 credit points of Junior Chemistry and 6 credit points of Junior Physics). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibitions:** BIOL (2002 or 2902 or 2102 or 2012)..
NB: The completion of 6 credit points ofMBLG units of study is highly recommended.
Qualified students will participate in alternative components of BIOL2012 Vertebrates and their Origins. The content and nature of these components may vary from year to year.

BIOL 2016 **Cell Biology**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr Jan Marc, Dr Murray Thomson, A/Prof Robyn Overall, Dr Osu Lilje. **Session:** Semester 1. **Classes:** (3 lee, 3 prac)/wk, (wks 1-9). **Prerequisites:** 12 credit points of Junior Biology or EDUH1016 and 12 credit points of Junior Chemistry. For students in the BSc (Marine Science) stream: 6 credit points of Junior Chemistry and either an additional 6 credit points of Junior Chemistry or 6 credit points of Junior Physics. **Prohibitions:** BIOL (2006 or 2106 or 2906 or 2916). **Assessment:** One 3 hr theory exam, one project assignment, one prac report.
NB: The completion of 6 credit points ofMBLG units of study is highly recommended.
This unit of study focuses on contemporary principles in cell biology and development in plant and animals, with emphasis on cellular functions and favouring the molecular perspective. Topics include the structure, function, and evolution of cells and organelles, cellular development and differentiation, and embryonic development. Material covered in lectures is integrated with laboratory classes. The unit of study is designed to complement intermediate Molecular Biology and Genetics units and BCHM2002 Molecules, Metabolism, and Cells. It leads ideally to various senior units of study in biology, including Plant Cells & Development, Plant Physiology, Recombinant DNA, Evolutionary and Developmental Genetics, Fungal Biology, Animal Physiology, Bioinformatics and Genomics, as well as senior units of study in biochemistry.
Textbooks
Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P. 2002. Molecular Biology of the Cell. 4th Edition. Garland Science
OR
Alberts B, Bray D, Hopkin K, Johnson A, Lewis J, Raff M, Roberts K, Walter P. 2004. Essential Cell Biology. Second Edition. Garland Science
Study Guide BIOL2016/2916 Cell Biology (available from Copy Centre)

BIOL 2916 **Cell Biology (Advanced)**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr Jan Marc, Dr Murray Thomson, A/Prof Robyn Overall, Dr Osu Lilje. **Session:** Semester 1. **Classes:** 3 lec/wk, 3hrs prac/wk (wkl-9). **Prerequisites:** Distinction average in BIOL (1001 or 1101 or 1901) and one of BIOL (1002 or 1902 or 1003 or 1903 or 1904 or 1905) and 12 cp of Junior Chemistry. **Prohibitions:** BIOL (2006 or 2106 or 2906 or 2016).. **Assessment:** One 3 hr exam, one practical report and one project assignment.
NB: The completion of 6 credit points ofMBLG units of study is highly recommended. This is a core intermediate unit in the BSc (Molecular Biology and Genetics) award course.
This unit of study focuses on contemporary principles in cell biology and development in plant and animals, with emphasis on cellular functions and favouring the molecular perspective. Topics include the structure, function, and evolution of cells and organelles, cellular development and differentiation, and embryonic development. Material covered in lectures is integrated with laboratory classes. The unit of study is designed to complement Intermediate Molecular Biology and Genetics units and BCHM2002 Molecules, Metabolism, and Cells. It leads ideally to various Senior units of study in Biology, including Plant Cells & Development, Plant Physiology, Recombinant DNA, Evolutionary and Developmental Genetics, Fungal Biology, Animal Physiology, Bioinformatics and Genomics, as well as Senior units of study in Biochemistry.
Textbooks
Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P. 2002. Molecular Biology of the Cell. 4th Edition. Garland Science
OR
Alberts B, Bray D, Hopkin K, Johnson A, Lewis J, Raff M, Roberts K, Walter P. 2004. Essential Cell Biology. Second Edition. Garland Science
Study Guide BIOL2016/2916 Cell Biology (available from Copy Centre)

BIOL 2017 **Entomology**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Dieter Hochuli. **Session:** Semester 2. **Classes:** 2.5 lecture and 2.5 practical. **Assumed Knowledge:** BIOL (2001 or 2901 or 2011 or 2911). **Prerequisites:** 12 credit points of Junior Biology. **Prohibitions:** BIOL2007. **Assessment:** Two hour theory exam, two practical reports, a presentation, review and an insect collection.
NB: The completion of 6 credit points ofMBLG units of study is highly recommended.
A general but comprehensive introduction to Insect Biology, this unit of study develops understanding of the scientific approach to insect structural diversity, identification, life histories, development, physiology, ecology, biogeography, principles of control, toxicology of insecticides and biology of major economic pests in NSW. Practical give a working knowledge of major orders of insects, economically important species, principles of collection, preservation and identification. Entomological data bases are introduced, and students do a library assignment and make and present a small collection of insects. Project work considers the use of insects in forensic investigations, insect-plant interactions and insects as tools for environmental assessment.

Biology Senior units of study

Students who intend to proceed from Intermediate to Senior Biology must:
(a) obtain Information for Students Considering Senior Biology Units of Study from the School Office (The Cottage, A10 Science Road). This booklet gives detailed synopses of all Senior Biology units of study.
(b) discuss their choice with a Biology Staff member before enrolling.
Sixteen 6 credit point units of study are offered.
BIOL 3006 Ecological Methods. Semester 1. (MS)
BIOL 3007 Ecology. Semester 2. (MS)
BIOL 3008 Marine Field Ecology. Pre-Semester 2 intensive. (MS)
BIOL 3009 Terrestrial Field Ecology. Pre-Semester 2 intensive.
BIOL 3010 Tropical Wildlife Biology & Management. Pre-Semester 1 intensive.
BIOL 3011 Ecophysiology. Semester 1. (MS)
BIOL 3012 Animal Physiology. Semester 1.
BIOL 3013 Marine Biology. Semester 1. (MS)
BIOL 3017 Fungal Biology. Summer Break and Semester 1.
BIOL 3018 Applications of Recombinant DNA Technology. Semester 1.
BIOL 3025 Evolutionary Genetics and Animal Behaviour. Semester 2.
BIOL 3026 Developmental Genetics. Semester 2.
BIOL 3027 Bioinformatics and Genomics. Semester 1.
PLNT 3001 Plant, Cell & Environment. Semester 2.
PLNT 3002 Plant Growth & Development. Semester 2.
PLNT 3003 Systematics & Evolution of Plants. Semester 1.
(Plus Advanced versions of the above - BIOL 39xx, PLNT 39xx)
Details of lectures and practical classes are given in the booklet: Information for Students Considering Senior Biology Units of Study.
Any combination of units may be chosen subject to timetable and prerequisite constraints.
Units of Study are offered subject to student numbers, availability of staff and resources. Quotas exist on Marine Field Ecology, BIOL 3008/3908, and Terrestrial Field Ecology, BIOL 3009/3909. When necessary, selection is based on academic merit.
Students majoring in Marine Science must enrol in 24 credit points of Senior Marine Science, including at least 6 credit points of Senior Biology (from those marked MS) and 6 credit points from GEOS units. If these credit points are taken as part of Marine Science they may not be counted towards a Biology major.
Selecting Units of Study
Select your unit of study after checking (a) that you have passed the qualifying units of study stated for each unit of study, and (b) checking your timetable. You are strongly advised to check the most up-to-date information (including details of quotas in Marine modules) in the booklet: Information for Students Considering Senior Biology Units of Study, available from the School Office (The Cottage, A10, Science Road).
Textbooks
A list of textbooks and reference books is provided in the booklet: Information for Students Considering Senior Biology Units of Study.

BIOL 3006 **Ecological Methods**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Clare McArthur (UEO), Dr Dieter Hochuli,

Dr Glenda Wardle. **Session:** Semester 1. **Classes:** Two 1hr lee, one 3hr lab/wk. **Assumed Knowledge:** BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). **Prerequisites:** 12 credit points of intermediate level Biology; or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. **Prohibitions:** BIOL (3906 or 3023 or 3923), MARS 3102.. **Assessment:** One 2hr exam (40% of assessment), practical assignments (60%; including calculations, reports and reviews).

This unit will consider ecology as a quantitative, experimental and theoretical science. It is concerned with the practical skills and philosophical background required to explore questions and test hypotheses in the real world. Application of ecological methods and theory to practical problems will be integrated throughout the unit of study. Lectures will be on sound philosophical and experimental principles, drawing on real examples for demonstration of concepts, and will be useful as one basis for informed conservation, utilization and general management of natural populations and habitats. Practical classes will deal with practical methods of determining patterns of distribution and abundance, problems of sampling, estimation of ecological variables, and methods of statistical analysis of field data. Computer simulations and analyses will be used where appropriate.

Textbooks

Underwood, A. J. 1997. Experiments in Ecology: their logical design and interpretation using analysis of variance, 1st edition. Cambridge University Press, Cambridge.
Quinn, G. P., and M. J. Keough. 2002. Experimental Design and Data Analysis for Biologists, 1 st edition. Cambridge University Press, Cambridge.

BIOL 3906 **Ecological Methods (Advanced)**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Clare McArthur (UEO), Dr Dieter Hochuli, Dr Glenda Wardle. **Session:** Semester 1. **Classes:** Two 1hr lee, one 3hr lab/wk. **Assumed Knowledge:** BIOL (2011 or 2911 or 2012 or 2912) or PLNT (2002 or 2902). **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology; or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. **Prohibitions:** BIOL (3006 or 3023 or 3923), MARS 3102.. **Assessment:** One 2hr exam (40% of assessment), practical assignments (60%; including calculations, reports and reviews).

This unit has the same objectives as BIOL 3006 Ecological Methods, and is suitable for students who wish to pursue certain aspects in greater depth. Entry is restricted, and selection is made from the applicants on the basis of their previous performance. Students taking this unit of study will participate in alternatives to some elements of the standard course and will be required to pursue the objectives by more independent means. Specific details of this unit of study and assessment will be announced in meetings with students in week 1 of semester 1. This unit of study may be taken as part of the BSc (Advanced) program.

BIOL 3007 **Ecology**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Prof Christopher Dickman (UEO), Dr Dieter Hochuli, Dr Clare McArthur, Dr Glenda Wardle. **Session:** Semester 2. **Classes:** Two 1hr lee, one 3hr lab/wk. **Assumed Knowledge:** Although not prerequisites, knowledge obtained from Ecological Methods (BIOL 3006), and Marine Field Ecology (BIOL 3008) and/or Terrestrial Field Ecology (BIOL 3009), or the associated advanced units (BIOL 3906, BIOL 3908 and/or BIOL 3909), is strongly recommended. **Prerequisites:** 12 credit points of Intermediate Biology; or ENVI 2111 or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. **Prohibitions:** BIOL (3907, 3024, 3924, 3040, 3940, 3041, 3941, 3042, 3942), MARS 3102.. **Assessment:** One 2hr exam (40% of assessment), two 1000 word essays (20%), one practical report (25%), and one summary (5%), and one presentation (10%).

This unit explores the dynamics of ecological systems, and considers the interactions between individual organisms and populations, organisms and the environment, and ecological processes. Lectures are grouped around four dominant themes: Interactions, Evolutionary Ecology, The Nature of Communities, and Conservation and Management. Emphasis is placed throughout on the importance of quantitative methods in ecology, including sound planning and experimental designs, and on the role of ecological science in the conservation, management, exploitation and control of populations. Relevant case studies and examples of ecological processes are drawn from marine, freshwater and terrestrial systems, with plants, animals, fungi and other life forms considered as required. Students will have some opportunity to undertake short term ecological projects, and to take part in discussions of important and emerging ideas in the ecological literature.

Textbooks

Ecology: an Australian Perspective (2003) Edited by P. Attiwill and B. Wilson. Oxford University Press.

BIOL 3907 **Ecology (Advanced)**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Prof Christopher Dickman (UEO), Dr Dieter Hochuli, Dr Clare McArthur, Dr Glenda Wardle. **Session:** Semester 2. **Classes:** Two 1hr lee, one 3hr lab. **Assumed Knowledge:** Although not prerequisites, knowledge obtained from Ecological Methods (BIOL 3006), and Marine Field Ecology (BIOL 3008) and/or Terrestrial Field Ecology (BIOL 3009), or the associated advanced units (BIOL 3906, BIOL 3908 and/or BIOL 3909), is strongly recommended. Students entering this unit of study should have achieved distinction average. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology; or ENVI 2111 or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. **Prohibitions:** BIOL (3007, 3024, 3924, 3040, 3940, 3041, 3941, 3042, 3942), MARS 3102.. **Assessment:** One 2hr exam (40% of assessment), two 1000 word essays (20%), one practical report (25%) and one summary (5%), one presentation (10%).

This unit has the same objectives as BIOL 3007 Ecology, and is suitable for students who wish to pursue certain aspects in greater depth. Entry is restricted, and selection is made from the applicants on the basis of their previous performance. Students taking this unit of study will participate in alternatives to some elements of the standard course and will be required to pursue the objectives by more independent means. Specific details of this unit of study and assessment will be announced in meetings with students in week 1 of semester 2. This unit of study may be taken as part of the BSc (Advanced) program.

Textbooks

Ecology: an Australian Perspective (2003) Edited by P. Attiwill and B. Wilson. Oxford University Press.

BIOL 3008 **Marine Field Ecology**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. A/Prof Ross Coleman (UEO), Prof Tony Underwood, Dr Gee Chapman. **Session:** S2 Intensive. **Classes:** 8 day field course. **Assumed Knowledge:** Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly advised. **Prerequisites:** 12 credit points of Intermediate Biology; or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. **Prohibitions:** BIOL (3908, 3040, 3940, 3024, 3924), MARS 3102. **Assessment:** Discussion groups (10%), research project proposal (10%), biodiversity survey report (20%), data analysis and checking (10%), research project report (50%).

NB: Dates: 5 July 2006 -12 July 2006

This field course provides a practical introduction to the experimental analysis of marine populations and assemblages. Students gain experience using a range of intertidal sampling techniques and develop a detailed understanding of the logical requirements necessary for manipulative ecological field experiments. No particular mathematical or statistical skills are required for this subject. Group experimental research projects in the field are the focus of the unit during the day, with lectures and discussion groups about the analysis of experimental data and current issues in experimental marine ecology occurring in the evening.

Note: Successful completion of BIOL 3008/3908 and BIOL3007/3907 is a prerequisite for students wishing to proceed to Honours in Marine Ecology.

Textbooks

No textbook is prescribed but Coastal Marine Ecology of Temperate Australia, eds. Underwood, A.J. & Chapman, M.G. University of New South Wales Press, 1995, provides useful background reading.

BIOL 3908 **Marine Field Ecology (Advanced)**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. A/Prof Ross Coleman (UEO), Prof Tony Underwood, Dr Gee Chapman. **Session:** S2 Intensive. **Classes:** 8 day field course, 4 tutorials. **Assumed Knowledge:** Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly advised. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology; or MARS 2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS 2006. **Prohibitions:** BIOL (3008, 3040, 3940, 3024, 3924), MARS 3102.. **Assessment:** Discussion groups (10%), research project proposal (10%), biodiversity report (20%), data analysis and checking (10%), research project report (50%).

NB: Dates: 5 July 2006 -12 July 2006

This unit has the same objectives as Marine Field Ecology BIOL 3008, and is suitable for students wishing to pursue certain aspects of marine field ecology in a greater depth. Entry is restricted and selection is made from the applicants on the basis of their past performance. Students taking this unit of study will be expected to take part in a number of additional tutorials after the field course on advanced aspects of experimental design and analysis and will be expected to incorporate these advanced skills into their analyses and project reports. This unit may be taken as part of the BSc(Advanced).

Note: Successful completion of BIOL 3008/3908 and BIOL3007/3907 is a prerequisite for students wishing to proceed to Honours in Marine Ecology.

Textbooks

No textbook is prescribed but Coastal Marine Ecology of Temperate Australia, eds. Underwood, A.J. & Chapman, M.G. University of New South Wales Press, 1995, provides useful background reading.

BIOL 3009 **Terrestial Field Ecology**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Glenda Wardle (UEO), Prof Christopher Dickman, Dr Dieter Hochuli, Dr Clare McArthur. **Session:** S2 Intensive. **Classes:** 6 day field trip, 10 lectures and 2 tutorials. **Assumed Knowledge:** Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly recommended. **Prerequisites:** 12 credit points of intermediate level Biology. **Prohibitions:** BIOL (3909, 3041, 3941, 3042, 3942, 3024, 3924).. **Assessment:** Discussions and quiz (10%), research project proposal and brief presenta-

tion (10%), sampling project report (20%), specimen collection (10%), research project report (50%).
NB: Dates: Sunday 16 July to Friday 21 July 2006
This field course provides practical experience in the experimental analysis of terrestrial populations and assemblages. Students learn a broad range of ecological sampling techniques and develop a detailed understanding of the logical requirements necessary for manipulative ecological field experiments. The field work incorporates survey techniques for plants, small mammals and invertebrates and thus provides a good background for ecological consulting work. Students attend a week-long field course and participate in a large-scale research project as well as conducting their own research project. Invited experts contribute to the lectures and discussions on issues relating to the ecology, conservation and management of Australia's terrestrial flora and fauna.

BIOL 3909 **Terrestial Field Ecology (Advanced)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Glenda Wardle (UEO), Prof Christopher Dickman, Dr Dieter Hochuli, Dr Clare McArthur. **Session:** S2 Intensive. **Classes:** 6 day field trip, 10 lectures and 2 tutorials. **Assumed Knowledge:** Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly recommended. **Prerequisites:** Distinction average in 12 credit points of intermediate level Biology. **Prohibitions:** BIOL (3009, 3041, 3941, 3042, 3942, 3024, 3924).. **Assessment:** Discussions and quiz (10%), research project proposal and brief presentation (10%), sampling project report (20%), specimen collection (10%), research project report (50%).
NB: Dates: Sunday 16 July to Friday 21 July 2006
This unit has the same objectives as BIOL 3009 Terrestrial Field Ecology, and is suitable for students who wish to pursue certain aspects in greater depth. Entry is restricted, and selection is made from the applicants on the basis of their previous performance. Students taking this unit of study will participate in alternatives to some elements of the standard course and will be required to pursue the objectives by more independent means. Specific details of this unit of study and assessment will be announced in meetings with students at the beginning of the unit. This unit of study may be taken as part of the BSc (Advanced) program.

BIOL 3010 **Tropical Wildlife Biology and Management**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. **Session:** SI Intensive. **Classes:** Field School 4 days. Classes at Sydney Uni 4 days. **Assumed Knowledge:** None, although Vertebrates and their Origins would be useful. **Prerequisites:** 12 credit points of intermediate level Biology. **Prohibitions:** BIOL3910. **Assessment:** One 2hr exam, one major practical report (2000wd), one 15min presentation, one 1hr practical exam.
NB: Dates: 19 February - 24th February 2006 Northern Territory followed by tutorials and p radicals at the University of Sydney 27 February - 2 March 2006.
Due to its isolation from the rest of the world and unique evolutionary history, the Australian terrestrial vertebrate fauna (amphibians, reptiles, birds and mammals) is highly unusual, and hence has a lot to offer in the study of evolutionary processes. The rarity of some species and Australia's unusual climate and landforms present special challenges for the management of our native wildlife. This unit of study addresses the evolution, ecology and management of Australia's terrestrial fauna. The subject comprises of a week-long field-based course in the Northern Territory, near Darwin, where students will learn field-based techniques in wildlife management, combined with lectures given by experts in the evolution, ecology and management of wildlife.

BIOL 3910 **Tropical Wildlife Biol & Management Adv**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. **Session:** SI Intensive. **Classes:** Field School 4 days. Classes Sydney Uni 4 days. **Assumed Knowledge:** None, although Vertebrates and their Origins would be useful. **Prerequisites:** Distinction average in 12 credit points of intermediate level Biology. **Prohibitions:** BIOL 3010, BIOL3014, BIOL3914. **Assessment:** One 2hr exam, one major practical report (2000wd), one 15min presentation, one 1hr practical exam.
NB: Department permission required for enrolment. Dates: 19 February - 24th February 2006 Northern Territory followed by tutorials and practicals at the University of Sydney 27 February - 2 March 2006.
This unit has the same objectives as TROP 3001 Tropical Wildlife Biology and Management, and is suitable for students who wish to pursue certain aspects in greater depth. Entry is restricted, and selection is made from the applicants on the basis of their previous performance. Students taking this unit of study will participate in alternatives to some elements of the standard course and will be required to pursue the objectives by more independent means. Specific details of this unit of study and assessment will be announced in meetings with students at the beginning of the unit. This unit of study may be taken as part of the BSc (Advanced) program.

BIOL 3011 **Ecophysiology**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Seebacher. **Session:** Semester 1. **Classes:** 2 lectures, 4hr lab per week. **Assumed Knowledge:** BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903). **Prerequisites:** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3911. **Assessment:** One 1.5 hr exam, field trip seminar, laboratory report.
NB: The completion of 6 credit points ofMBLG units is highly recommended.
Ecophysiology is a conceptually based unit of study that covers physiological interactions between organisms and their environments. The importance of environmental parameters, such as temperature, water, salt and pH, for biological functions, are investigated. Physiological interactions among animals, plants and fungi are discussed. Examples will have an emphasis on vertebrates and marine organisms. As part of the field component, students design their own research project to be conducted during the week-end long field trip.

BIOL 3911 **Ecophysiology (Advanced)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Seebacher. **Session:** Semester 1. **Classes:** 2 lectures, 4hr lab per week. **Assumed Knowledge:** BIOL (2002 or 2012 or 2006 or 2016 or 2902 or 2912 or 2906 or 2916) or PLNT (2003 or 2903). **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3011. **Assessment:** One 1.5 hr exam, field trip seminar, independent project report.
NB: The completion of 6 credit points ofMBLG units is highly recommended.
Ecophysiology (Advanced) shares the same lectures as BIOL 3011 Ecophysiology, but it includes an independent project in place of the laboratory report (equivalent of 20% of Ecophysiology). The content and nature of the independent project vary and students are encouraged to design their own project.

BIOL 3012 **Animal Physiology**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. A/Prof Thompson. **Session:** Semester 1. **Classes:** 2 lectures, 4hr lab per week. **Prerequisites:** 12 credit points of Intermediate Biology including BIOL (2012 or 2002 or 2003 or 2016 or 2006 or 2912 or 2902 or 2903 or 2916 or 2906) or PLNT (2003 or 2903). **Prohibitions:** BIOL3912. **Assessment:** One 1.5 hr exam, laboratory/library reports.
NB: The completion of 6 credit points ofMBLG units is highly recommended.
Animal Physiology explores aspects of the physiology of animals and how physiology is influenced by environmental factors. The emphasis of the unit of study is vertebrate animals, although invertebrate examples will be used where appropriate. The unit of study is designed to complement Ecophysiology. Particular emphasis will be placed on energy metabolism and respiration in a range of animals and how that is affected by body mass and locomotion.

BIOL 3912 **Animal Physiology (Advanced)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. A/Prof Thompson. **Session:** Semester 1. **Classes:** 2 lee, 4hr lab/ week. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology including BIOL (2012 or 2002 or 2003 or 2006 or 2016 or 2912 or 2902 or 2903 or 2916 or 2906) or PLNT (2003 or 2903). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibitions:** BIOL3012.. **Assessment:** One 1.5 hr exam, laboratory reports, independent project report.
NB: The completion of 6 credit points ofMBLG units is highly recommended.
Animal Physiology (Advanced) shares the same lectures as Animal Physiology, but it includes an independent project in place of one or more components of the laboratory classes to the equivalent of 30% of Animal Physiology. The content and nature of the independent project may vary from year to year.

BIOL 3013 **Marine Biology**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 lee, 4hr lab/ week. **Assumed Knowledge:** MARS2006. **Prerequisites:** 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3913. **Assessment:** Practical reports, paper criticisms and other assignments.
NB: The completion of 6 credit points ofMBLG units is highly recommended.
We will examine in detail processes which are important for the establishment and maintenance of marine communities. Lectures will expose students to the key ideas, researchers and methodologies within selected fields of marine biology. Laboratory sessions will complement the lectures by providing students with hands-on experience with the organisms and the processes that affect them. Students will develop critical analysis skills while examining the current literature.

BIOL 3913 **Marine Biology (Advanced)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 lee, 4hr lab/ week. **Assumed Knowledge:** MARS2006. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology; or MARS2006 and 6 credit points of Intermediate Biology; or 12 credit points of Intermediate MARS units, including MARS2006. **Prohibitions:** BIOL3013. **Assessment:** Practical reports, paper criticisms and other assignments.
NB: The completion of 6 credit points ofMBLG units is highly recommended.

Qualified students will participate in alternative components of the BIOL 3103 Marine Biology unit. The content and nature of these components may vary from year to year.

BIOL 3017 **Fungal Biology**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr P McGee. **Session:** Semester 1a. **Classes:** 5 lee & 15 prac in a two week intensive program immediately prior to semester one (labs run from 20 February to 3 March 2006), plus the equivalent of 30hrs self-guided study during the semester. **Prerequisites:** 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. **Prohibitions:** BIOL3917. **Assessment:** One 2hr take home exam, laboratory and written assignments.
NB: The completion of 6 credit points ofMBLG units is highly recommended.

Students interested in fungal ecology, environmental and rehabilitation biology, fungal biodiversity, biological control and soil microbiology will study the structure and function of fungi. Emphasis will be placed on the benefit provided by fungi in symbiotic interactions with plants, including mycorrhizal fungi and shoot-borne endophytes. Physiological and ecological implications of the interactions will also be examined, emphasising the use of these interactions in vegetation restoration and biocontrol of pests and pathogens. Students will be encouraged to develop a deeper understanding of one area of Fungal Biology through independent study. Part of the learning material will be available on the internet.

BIOL 3917 **Fungal Biology (Advanced)**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr P McGee. **Session:** Semester 1a. **Classes:** 5 lee & 15 prac in a two week intensive program immediately prior to semester one (from 20 February to 3 March 2006), plus the equivalent of 30hrs self-guided study during the semester. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. **Prohibitions:** BIOL3017. **Assessment:** One 2hr take home exam, laboratory and written assignments.
NB: The completion of 6 credit points ofMBLG units is highly recommended.

Qualified students will participate in alternative components of BIOL3017 Fungal Biology. The content and nature of the components will vary each year, but will include individual research on a topic agreed on with the executive officer.

BIOL 3018 **Applications of Recombinant DNA Tech**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr B Lyon, Prof R Skurray. **Session:** Semester 1. **Classes:** 2 lectures, up to 4hr lab per week. **Prerequisites:** 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units.
For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **Prohibitions:** BIOL3918. **Assessment:** One 2 hr exam, practical report, assignment.

A unit of study with lectures, practicals and tutorials on the application of recombinant DNA technology and the genetic manipulation of prokaryotic and eukaryotic organisms. Lectures cover the applications of molecular genetics in biotechnology and consider the impact and implications of genetic engineering. Topics include 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, the genetic engineering of animals and plants, and the environmental release of genetically-modified (transgenic) organisms. Practical work may include nucleic acid isolation and manipulation, gene cloning and PCR amplification, DNA sequencing and computer analysis of gene sequences, immunological detection of proteins, and the genetic transformation and assay of plants.

BIOL 3918 **Applications of Recombinant DNA Tech Adv**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr B Lyon. **Session:** Semester 1. **Classes:** 2 lectures, 4hr lab per week. **Prerequisites:** Distinction average in 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units.
For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED 2502 or BMED 2802. **Prohibitions:** BIOL3018. **Assessment:** One 2 hr exam, assignment, seminar.

Qualified students will participate in alternative components of BIOL 3018 Applications of Recombinant DNA Technology. The content and nature of these components may vary from year to year.

BIOL 3025 **Evolutionary Genetics & Animal Behaviour**

6 credit points. B A, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. A/Prof Oldroyd. **Session:** Semester 2. **Classes:** 2 lees, up to 4hrlab/wk. **Prerequisites:** 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units.
For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **Prohibitions:** BIOL3925, BIOL3928. **Assessment:** One 1.5hr exam, assignments, seminar.

The unit of study covers the main themes of modern evolutionary theory including population genetics. In the practicals, students use molecular methods to quantify genetic variation in natural populations. Using these skills we will search for population subdivision and discuss how this can lead to speciation. Lectures will cover how the evolution of traits can be tracked using the comparative method. We will consider how studies of sex ratios, sexual selection, kin selection, game theory and quantitative genetics can illuminate the mechanisms by which animals have evolved, and explain why they behave as they do. We will then consider if these themes have any relevance to human sociobiology. The unit also covers the role of genetics in conservation. There will be a field trip to collect organisms for population genetic analysis. There will be plenty of opportunity in the student seminars to examine the more controversial aspects of modern evolutionary thought.

BIOL 3925 **Evolutionary Gen. & Animal Behaviour Adv**

6 credit points. B A, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. A/Prof Oldroyd. **Session:** Semester 2. **Classes:** 2 lees, up to 4hr lab/wk. **Prerequisites:** Distinction average in12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units.
For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED2502 or BMED2802. **Prohibitions:** BIOL (3025 or 3928).. **Assessment:** One 1.5hr exam, assignments, seminar.

Qualified students will participate in alternative components of BIOL 3025 Evolutionary Genetics and Animal Behaviour. The content and nature of these components may vary from year to year. Some assessment will be in an alternative format.

BIOL 3026 **Developmental Genetics**

6 credit points. B A, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr Saleeba, Dr Raphael, A/Prof Gillies. **Session:** Semester 2. **Classes:** 2 lees, up to 4hr lab/wk. **Prerequisites:** 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units.
For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **Prohibitions:** BIOL3926, BIOL3929. **Assessment:** One 2hr exam, assignments.

This unit discusses current understanding of developmental genetics with emphasis on molecular genetics. The developmental genetics of model plants and animals will be investigated. In particular, the molecular genetics of vertebrate development, pattern formation and gene expression, sex determination, the study of mutants in development, plant specific processes such as root formation and flowering, will be covered making reference to modern techniques such as transgenics, recombinant DNA technology, and tissue specific expression analysis. Various methods of genetic mapping will be covered. Practical work complements the theoretical aspects and develops important genetical skills.

BIOL 3926 **Developmental Genetics (Advanced)**

6 credit points. B A, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr Saleeba, Dr Raphael, A/Prof Gillies. **Session:** Semester 2. **Classes:** 2 lees, up to 4hr lab/wk. **Prerequisites:** Distinction average in 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units.
For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED 2502 or BMED 2802. **Prohibitions:** BIOL (3026 or 3929). **Assessment:** One 2hr exam, assignments.

Qualified students will participate in alternative components to BIOL3026 Developmental Genetics. The content and nature of these components may vary from year to year. Some assessment will be in an alternative format.

BIOL 3027 **Bioinformatics and Genomics**

6 credit points. B A, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr Firth, Dr Jermiin. **Session:** Semester 1. **Classes:** 2 lees, up to 4hr lab/wk. **Prerequisites:** 12 credit points from MBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units.
For BMedSc students: 36 credit points of Intermediate BMED units including BMED 2502/2802. **Prohibitions:** BIOL3927. **Assessment:** One 2 hr exam, assignments.
NB: This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.

A unit of study comprising lectures, practical assignments and tutorials on the application of bioinformatics to the storage, retrieval and analysis of biological information, principally in the form of nucleotide and amino acid sequences. Although the main emphasis is on sequence data, other forms of biological information are considered. The unit begins with the assembly and management of nucleotide sequence data and an introduction to the databases that are normally used for the storage and retrieval of biological data, and continues

with signal detection and analysis of deduced products, sequence alignment, and database search methods. Phylogenetic reconstruction based on distance-based methods, parsimony methods and maximum-likelihood methods is described and students are introduced to the idea of tree-space, phylogenetic uncertainty, and taught to evaluate phylogenetic trees and identify factors that will confound phylogenetic inference. Finally, whole genome analysis and comparative genomics are considered. The unit gives students an appreciation of the significance of bioinformatics in contemporary biological science by equipping them with skills in the use of a core set of programs and databases for "in silico" biology, and an awareness of the breadth of bioinformatics resources and applications.

BIOL 3927 **Bioinformatics and Genomics (Advanced)**
6 credit points. B A, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr Firth, Dr Jermiin. **Session:** Semester 1. **Classes:** 2 lees & 4 hr lab/wk. **Prerequisites:** Distinction average in 12 credit points fromMBLG (2001/2901/2771/2871), MBLG (2002/2902/2072/2972) and Intermediate Biology units.
For BMedSc students: 36 credit points of Intermediate BMED units including Distinction in BMED 2502 or BMED 2802. **Prohibitions:** BIOL3027. **Assessment:** One 2 hr exam, assignments.
NB: This unit of study is recommended for third year students enrolled in the BSc (Bioinformatics) degree.
Qualified students will participate in alternative components of BIOL3027 Bioinformatics and Genomics. The content and nature of these components may vary from year to year. Some assessment will be in alternative format.

Biology Honours
A single Honours program in Biology accommodates students who have completed 24 credit points of Senior Biology or equivalent. Information about qualifications for entry into Honours is available from the School Office (Science Road Cottage, A10).
During the Honours year the principles established in the first three years of the undergraduate award course are further developed, and students are introduced to a wider field of biology and biological techniques. Students may elect to specialise in any of the aspects of biology that are studied in the School.
Students who have signified their intention of entering Honours will be notified of acceptance after the publication of the second semester Senior examination results. Honours students are expected to start their academic year at the beginning of February or in July.
With the permission of the Head of School and the Faculty of Science, students who have qualified to take Honours and passed 12 credit points of Junior Biology may take Biology Honours without having taken Intermediate or Senior Biology units of study. The concession is intended for students who have majored in physics, chemistry or biochemistry and wish to study biophysics or plant physiology; they should first discuss their qualifications with Associate Professor R. L. Overall.
The Honours unit of study comprises:
(a) a project in which the student investigates a problem and presents oral and written accounts of his or her research.
(b) coursework units chosen from a program offered by the School.
(c) instruction in experimental design, and other technical instruction.
The degree will be awarded on the basis of:
(a) written assignments and essays from coursework units.
(b) marks awarded for a thesis on the subject of the project.

Graduate Diploma in Science (Biology)
The Graduate Diploma program in Biology is available as a one year full-time or two year part-time course. Information about qualifications for entry into the Graduate Diploma is available from the School Office (Science Road Cottage, A10).
The course is intended for students wishing to progress beyond a pass degree but not via the Honours degree, or who are ineligible for admission to Honours. Students enrolled in the one year course will follow the same program as Biology Honours students and be assessed using similar criteria. Students may therefore elect to specialise in any area within the research interests of the School. Projects jointly supervised by staff in other Schools or Departments within the University may also be considered. Students undertaking the two year course (part-time) will follow the same curriculum but will satisfactorily complete the instructed elements of the course before progressing to the project element at the end of the first year.
Students who have signified their intention to enter the Graduate Diploma course will be notified of acceptance after the publication of the second semester Senior examination results. Graduate Diploma students are expected to start their academic year at the beginning of February or in July.
The composition of the Graduate Diploma course is identical to that for Honours (see Biology Honours).

Postgraduate study in Biology
MSc and PhD degrees by research are available in the School.
On completion of an Honours degree (at first or second class level), MSc Preliminary course or Graduate Diploma in Science, students may pursue candidature for MSc degrees by research. The range of research fields offered and the fields of each member of academic staff are listed on the School's web site at www.bio.usyd.edu.au/

Cell Pathology
Cell Pathology is taught by the Department of Pathology.
The Department of Pathology is located on Level 5 of the Blackburn Building (phone 9351 2414).

CPAT 3201 **Pathogenesis of Human Disease 1**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Bob Bao. **Session:** Semester 2. **Classes:** 3 lecs/wk, 1 tut/wk. **Prerequisites:** At least 6cp intermediate of one of the following: ANAT or BCHM or MBLG or BIOL or HPSC or MICR or PCOL or PHSI, or as the head of department determines. **Assessment:** One 2hr exam (60%), one major research essay (1500w) generation of detractors for MCQ stems with referenced support blurbs for these (40%).
The Pathological Basis of Human Disease 1 unit of study modules will provide a theoretical background to the scientific basis of the pathogenesis of disease. Areas covered in theoretical modules include: tissue responses to exogenous factors, adaptive responses to foreign agents, cardiovascular/pulmonary/gut responses to disease, forensic science, neuropathology and cancer.
The aim of the course is
- To give students an overall understanding of the fundamental biological mechanisms governing disease pathogenesis in human beings.
- To introduce to students basic concepts of the pathogenesis, natural history and complications of common human diseases.
- To demonstrate and exemplify differences between normality and disease.
- To explain cellular aspects of certain pathological processes.
Together with CPAT3202, the unit of study would be appropriate for those who intend to proceed to Honours research, to professional degrees or to careers in biomedical areas such as hospital science. Together with CPAT3202, it fulfils the Pathology requirements for the Centre for Chiropractic at Macquarie University.
Textbooks
Robbins Basic Pathology, Kumar, Cotran & Robbins 7th Edition, 2003, Publ Saunders, Philadelphia, Pennsylvania, USA.

CPAT 3202 **Pathogenesis of Human Disease 2**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Bob Bao. **Session:** Semester 2. **Classes:** One 2hr prac/wk, One museum Practical (1hr), 1 tut/wk. **Prerequisites:** At least 6cp intermediate of one of the following: ANAT or BCHM or MBLG or BIOL or HPSC or MICR or PCOL or PHSI, or as the head of department determines. **Corequisites:** CPAT3201. **Assessment:** One 2 hr exam (70%), Museum Practical Reports (30%).
The Pathological Basis of Human Disease 2 unit of study modules will provide a practical background to the scientific basis of the pathogenesis of disease. Areas covered in practical modules include disease specimen evaluation on a macroscopic and microscopic basis.
The aim of the course is
- To enable students to gain an understanding of how different organ systems react to injury and to apply basic concepts of disease processes.
- To equip students with skills appropriate for careers in the biomedical sciences and for further training in research or professional degrees.
At the end of the course students will:
- Have acquired practical skills in the use of a light microscope.
- Have an understanding of basic investigative techniques for disease detection in pathology.
- Be able to evaluate diseased tissue at the macroscopic and microscopic level.
- Have the ability to describe, synthesise and present information on disease pathogenesis.
- Transfer problem-solving skills to novel situations related to disease pathogenesis.
The unit of study would be appropriate for those who intend to proceed to Honours research, to professional degrees or to careers in biomedical areas such as hospital science. Together with CPAT3201, it fulfils the Pathology requirements for the Centre for Chiropractic at Macquarie University.
Textbooks
Robbins Basic Pathology, Kumar, Cotran & Robbins 7th Edition, 2003, Publ Saunders, Philadelphia, Pennsylvania, USA.

Chemical Engineering

The Department of Chemical Engineering is part of the Faculty of Engineering. In addition to providing professional training in this branch of engineering it offers CHNG1103 Introduction to Material and Energy Transformations to students enrolled in the Faculty of Science.

Details regarding this unit of study can be obtained from the Faculty of Engineering Handbook. This unit of study is intended to give a science student some insight into the principles which control the design and performance of large scale industrial processing plants. Faculty of Science students are invited to enrol in any other chemical engineering unit of study, provided they have the appropriate prerequisites and have consulted with the Department of Chemical Engineering.

Double Degree

Science graduates may obtain up to two years advanced standing towards a Bachelor of Engineering degree in Chemical Engineering. Students wishing to undertake this option must seek academic advice from the Department of Chemical Engineering. Further details regarding admission to the BE in Chemical Engineering may be obtained from the Engineering Faculty Office.

Chemistry

Chemistry Junior units of study

Dr Adrian George

The School of Chemistry offers a number of 6 credit point units of study to cater for the differing needs of students. These units of study are:

CHEM 1001 Fundamentals of Chemistry 1A
CHEM 1002 Fundamentals of Chemistry IB
CHEM 1101 Chemistry 1A
CHEM 1102 Chemistry IB
CHEM 1901 Chemistry 1A (Advanced)
CHEM 1902 Chemistry IB (Advanced)
CHEM 1903 Chemistry 1A (Special Studies Program)
CHEM 1904 Chemistry IB (Special Studies Program)
CHEM 1908 Chemistry 1 Life Sciences A (Adv)
CHEM 1909 Chemistry 1 Life Sciences B (Adv)

Fully detailed information about all units of study, prescribed textbooks and reference books is available from the School of Chemistry and is contained in a booklet, Information for Students, distributed at the time of enrolment.

Exercises are issued and tutorials are held at regular intervals for all units of study.

CHEM 1001 **Fundamentals of Chemistry 1A**

6 credit points. B A, B Anim Sc, B E, B Ed, B Sc (Psych), B Hort Sc, B L W Sc, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc Agr, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee & 1 tut/wk & 3hrs prac/wk for 10 wks. **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 chemistry bridging course before lectures commence. **Prohibitions:** CHEM 1101 or 1901 or 1903 or 1909. **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%).

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.

Textbooks

A booklist is contained in the booklet Junior Chemistry distributed at enrolment. Further information can be obtained from the School.

CHEM 1002 **Fundamentals of Chemistry IB**

6 credit points. B A, B Anim Sc, B E, B Ed, B Sc (Psych), B Hort Sc, B L W Sc, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc Agr, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee & 1 tut/wk & 3hrs prac/wk for 10 wks. **Prerequisites:** CHEM (1001 or 1101) or equivalent. **Prohibitions:** CHEM (1102 or 1902 or 1904 or 1908). **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%).

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

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

Textbooks

A booklist is contained in the booklet Junior Chemistry distributed at enrolment. Further information can be obtained from the School.

CHEM 1101 **Chemistry 1A**

6 credit points. B A, B App Sc (Ex &Sp Sc), B Sc (Nutr), B E, B Ed, B Sc (Psych), B L W Sc, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Wint. **Session:** Semester 2, Semester 1, Summer. **Classes:** 3 lee & 1 tut/wk & 3hrs prac/wk for 10 wks. **Assumed Knowledge:** HSC Chemistry and Mathematics. **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (1001 or 1901 or 1903 or 1909). **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%).

Chemistry 1A is built on a satisfactory prior knowledge of the HSC Chemistry course. A brief revision of basic concepts of the high school course is given. Chemistry 1A covers chemical theory and physical chemistry.

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

Textbooks

A booklist is contained in the booklet Junior Chemistry distributed at enrolment. Further information can be obtained from the School.

CHEM 1102 **Chemistry IB**

6 credit points. B A, B App Sc (Ex &Sp Sc), B Sc (Nutr), B E, B Ed, B Sc (Psych), B L W Sc, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 1, Summer, Semester 2. **Classes:** 3 lee & 1 tut/wk & 3hrs prac/wk for 10 wks. **Prerequisites:** CHEM (1101 or 1901) or a Distinction in CHEM 1001 or equivalent. **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (1002 or 1902 or 1904 or 1908). **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%).

Chemistry IB is built on a satisfactory prior knowledge of Chemistry 1A 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.

Textbooks

A booklist is contained in the booklet Junior Chemistry distributed at enrolment. Further information can be obtained from the School.

CHEM 1901 **Chemistry 1A (Advanced)**

6 credit points. B A, B Anim Sc, B E, B Ed, B Sc (Psych), B Hort Sc, B L W Sc, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), B Sc Agr, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee & 1 tut/wk & 3hrs prac/wk for 10 wks. **Prerequisites:** UAI of at least 96.4 and HSC Chemistry result in band 5 or 6, or Distinction or better in a University level Chemistry unit, or by invitation. **Corequisites:** Recommended concurrent unit of study: 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (1001 or 1101 or 1903 or 1909). **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%).

NB: Department permission required for enrolment.

Chemistry 1A (Advanced) is available to students with a very good HSC performance as well as a very good school record in chemistry or science. Students in this category are expected to do Chemistry 1A (Advanced) rather than Chemistry 1 A.

The theory and practical work syllabuses for Chemistry 1A and Chemistry 1A (Advanced) are 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 1A (Advanced) covers chemical theory and physical chemistry.

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

Textbooks

A booklist is contained in the booklet Junior Chemistry distributed at enrolment. Further information can be obtained from the School.

CHEM 1902 **Chemistry IB (Advanced)**

6 credit points. B A, B Anim Sc, B E, B Ed, B Sc (Psych), B Hort Sc, B L W Sc, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc Agr, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee & 1 tut/wk & 3hrs prac/wk for 10 wks. **Prerequisites:** CHEM (1901 or 1903) or Distinction in CHEM1101 or equivalent. **Corequisites:** Recommended concurrent unit of study: 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (1002 or 1102 or 1904 or 1908). **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%).

NB: Department permission required for enrolment.

Chemistry IB (Advanced) is built on a satisfactory prior knowledge of Chemistry 1A (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.

Textbooks

A booklist is contained in the booklet Junior Chemistry distributed at enrolment. Further information can be obtained from the School.

CHEM 1903 **Chemistry 1A (Special Studies Program)**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition). **Session:** Semester 1. **Classes:** 3 lee & 1 tut/wk & 3hrs prac/wk. **Prerequisites:** UAI of at least 98.7 and HSC Chemistry result in Band 6. **Corequisites:** Recommended concurrent

unit of study: 6 credit points of Junior Mathematics.. **Prohibitions:** CHEM (1001 or 1101 or 1901 or 1909).
NB: Department permission required for enrolment. Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.
Entry to Chemistry 1A (Special Studies Program) is restricted to students with an excellent school record in Chemistry. The practical work syllabus for Chemistry 1A (Special Studies Program) is very different from that for Chemistry 1A and Chemistry 1A (Advanced) and consists of special project-based laboratory exercises. All other unit of study details are the same as those for Chemistry 1A (Advanced).

A Distinction in Chemistry 1A (Special Studies Program) is an acceptable prerequisite for entry into Chemistry IB (Special Studies Program).

CHEM 1904 **Chemistry IB (Special Studies Program)**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Nutrition). **Session:** Semester 2. **Classes:** 3 lee & 1 tut/wk & 3 hrs prac/wk. **Prerequisites:** Distinction in CHEM 1903. **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics.. **Prohibitions:** May not be counted with CHEM (1002 or 1102 or 1902 or 1908)..
NB: Department permission required for enrolment. Entry is by invitation. This unit of study is deemed to be an Advanced unit of study.
Entry to Chemistry IB (Special Studies Program) is restricted to students who have gained a Distinction in Chemistry 1A (Special Studies Program). The practical work syllabus for Chemistry IB (Special Studies Program) is very different from that for Chemistry IB and Chemistry IB (Advanced) and consists of special project-based laboratory exercises. All other unit of study details are the same as those for Chemistry IB (Advanced).

Chemistry IB (Special Studies Program) is an acceptable prerequisite for entry into Intermediate Chemistry units of study.

CHEM 1908 **Chemistry 1 Life Sciences A (Advanced)**

6 credit points. B App Sc (Ex &Sp Sc), B Sc (Nutr), B Med Sc, B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 1. **Classes:** 3 x lhr lee + 1 tut/wk + 3 hrs prac/wk for 10 wks. **Prerequisites:** UAI of at least 93 and HSC Chemistry result in band 5 or 6, or Distinction or better in a University level Chemistry unit, or by invitation. **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (1002 or 1102 or 1902 or 1904). **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%).
NB: Department permission required for enrolment. This unit of study is available to students enrolled in the Bachelor of Medical Science, the Bachelor of Science (Molecular Biology and Genetics), the Bachelor of Science (Nutrition) and the Bachelor of Science (Molecular Biotechnology) only.
Lectures (39 hr): A strong background in junior chemistry is essential for understanding molecular structures and processes. This unit of study provides the basis for understanding fundamental chemical processes and structures at an advanced level, with particular emphasis on how these apply to the life sciences. Topics to be covered include: atomic structure, chemical bonding and organic chemistry of functional groups with applications in life sciences.

Tutorials (13 hr): These will provide aspects of problem solving relevant to the theory.
Textbooks
A booklist is contained in the booklet Junior Chemistry distributed at enrolment. Further information can be obtained from the School.

CHEM 1909 **Chemistry 1 Life Sciences B (Advanced)**

6 credit points. B App Sc (Ex &Sp Sc), B Sc (Nutr), B Med Sc, B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 2. **Classes:** 3 x lhr lee + 1 tut/wk + 3 hrs prac/wk for 10 wks. **Prerequisites:** CHEM 1908 or equivalent. **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics.. **Prohibitions:** CHEM (1001 or 1101 or 1901 or 1903). **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%).
NB: This unit of study is available to students enrolled in the Bachelor of Medical Science, the Bachelor of Science (Molecular Biology and Genetics), the Bachelor of Science (Nutrition) and the Bachelor of Science (Molecular Biotechnology) only.
Lectures (39 hr): A strong background in junior chemistry is essential for understanding molecular structures and processes. This unit of study provides the basis for understanding fundamental chemical processes and structures at an advanced level, with particular emphasis on how these apply to the life sciences. Topics to be covered include: chemical equilibria, solutions, acids and bases, ions in solution, redox reactions, colloids and surface chemistry, the biological periodic table, chemical kinetics and radiochemistry with applications to life sciences.

Tutorials (13 hr): These will provide aspects of problem solving relevant to the unit of study.
Textbooks
A booklist is contained in the booklet Junior Chemistry distributed at enrolment. Further information can be obtained from the School.

Chemistry Intermediate units of study

Dr R J Clarke

The School of Chemistry offers a number of units of study to cater for the differing needs of students. The following 6 credit point units of study are offered:
CHEM 2401 Molecular Reactivity and Spectroscopy,
CHEM 2402 Chemical Structure and Stability,
CHEM 2403 Chemistry of Biological Molecules,
CHEM 2404 Forensic and Environmental Chemistry,
CHEM 2911 Molecular Reactivity and Spectroscopy (Adv),
CHEM 2912 Chemical Structure and Stability (Adv),
CHEM 2913 Chemistry of Biological Molecules (Adv),
CHEM 2915 Molecular Reactivity and Spectroscopy SSP,
CHEM 2916 Chemical Structure and Stability SSP,

CHEM 2401 **Molecular Reactivity and Spectroscopy**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. Dr R J Clarke. **Session:** Semester 1. **Classes:** Three lectures per week, seven 1 hour tutorials per semester, eight four-hour practicals per semester. **Prerequisites:** CHEM (1102 or 1902 or 1904 or 1909 or 1612); 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (2001 or 2101 or 2301 or 2311 or 2312 or 2502 or 2901 or 2903 or 2911 or 2915). **Assessment:** 1 x 3hr examination, quizzes, lab reports.
This is one of two core units of study for students interested in majoring in chemistry. The unit covers fundamental consideration of molecular electronic structure and its role in molecular reactivity and spectroscopy and includes applications of spectroscopy in environmental studies. It also covers the organic chemistry of aromatic systems, aldehydes and ketones, organometallic reagents, carbohydrates and DNA.

CHEM 2402 **Chemical Structure and Stability**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. Dr R J Clarke. **Session:** Semester 2. **Classes:** Three lectures per week, seven 1 hour tutorials per semester, eight four-hour practicals per semester. **Prerequisites:** CHEM (1102 or 1902 or 1904 or 1909 or 1612); 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (2202 or 2302 or 2902 or 2912 or 2916). **Assessment:** 1 x 3hr examination, quizzes, lab reports.
Lectures:
The lectures for this unit of study include the structure, bonding and properties of inorganic compounds and complexes; statistical thermodynamics and thermodynamics; amine chemistry, electrophilic substitution and the chemistry of aromatics, the chemistry of carbonyls, nucleophilic organometallic reagents and organic synthesis and synthetic methods.
Additional information:
Main chemistry unit of study for students expecting to major in chemistry.

CHEM 2403 **Chemistry of Biological Molecules**

6 credit points. B A, B E, B IT, B Sc, B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), B Sc Media Commun, UG Study Abroad Program. Dr R J Clarke. **Session:** Semester 2. **Classes:** Three lectures per week, six 1 hour tutorials per semester, five 4 hour practical sessions per semester. **Prerequisites:** CHEM (1102 or 1902 or 1904 or 1909); 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (2001 or 2901 or 2311 or 2312 or 2903 or 2913). **Assessment:** 1 x 3hr examination, quizzes, lab reports.
NB: To enrol in Senior Chemistry in 2007 it will be a requirement that students complete CHEM (2401 or 2911 or 2915) and CHEM (2402 or 2912 or 2916). Students are advised that combinations ofCHEM2 units that do not meet this requirement will generally not allow progression to Senior Chemistry.
This unit of study aims to give students an understanding of the chemistry underlying biological systems. Lectures will cover the mechanisms of organic chemical reactions and their application to biological systems, the molecular basis of spectroscopic techniques used in biological chemistry, analytical chemistry of biological systems, biopolymers and biocolloids and topics from inorganic chemistry of relevance to biological systems (metalloproteins, biomineralisation, etc). The practical work will cover experimental investigations of chemical kinetics, organic and inorganic chemical analysis, biopolymer characterisation, and preparation and characterisation of a metal-based anti-inflammatory drug.

CHEM 2404 **Forensic and Environmental Chemistry**

6 credit points. B A, B E, B Sc, B Sc (Environmental), UG Study Abroad Program. Dr R J Clarke. **Session:** Semester 1. **Classes:** Three lectures per week, six 1 hour tutorials, plus five 4 hour practical sessions per semester. **Prerequisites:** CHEM 1102 or 1902 or 1904 or 1909; 6 credit points of Junior Mathematics. **Prohibitions:** CHEM3107 or CHEM3197. **Assessment:** One 3 hour exam plus quizzes, lab reports.
NB: To enrol in Senior Chemistry in 2007 it will be a requirement that students complete CHEM (2401 or 2911 or 2915) and CHEM (2402 or 2912 or 2916). Students are advised that combinations ofCHEM2 units that do not meet this requirement will generally not allow progression to Senior Chemistry.
Chemical analysis is a fundamental task of a professional chemist. The identification of chemical species and the quantitative determination of how much of each species is present are the essential first steps in solving all chemical puzzles. In this course students learn analytical techniques and chemical problem solving in the context

of forensic and environmental chemistry. The lectures on Environmental Chemistry will cover two main topics: (i) atmospheric chemistry, covering topics such as air pollution, global warming and ozone depletion, and (ii) water and soil chemistry, including topics such as bio-geochemical cycling, chemical speciation, pH-pE diagrams, catalysis and Green Chemistry. The Forensic component of the course examines the gathering and analysis of evidence, using a wide variety of chemical techniques, as well as the development of specialized forensic techniques in the analysis of trace evidence. Students will also study forensic analyses of inorganic, organic and biological materials, dust, soil, inks, paints, documents, etc. in police, customs and insurance investigations and learn how techniques such as IR, UV, MS, GC, GC-MS, XRD, XRF, SEM, EDAXICP, HPLC, trace metals analysis, separation science, DNA analysis, etc., singly and in combination are used to examine forensic evidence.

CHEM 2911 **Molecular Reactivity & Spectroscopy Adv**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Dr R J Clarke. **Session:** Semester 1. **Classes:** Three lectures per week, seven 1 hour tutorials per semester and eight 4 hour practicals per semester. **Prerequisites:** A WAM of 65 or better and a Credit or better in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (2001 or 2101 or 2301 or 2311 or 2312 or 2401 or 2502 or 2901 or 2903 or 2915). **Assessment:** One 3 hour exam plus quizzes, lab reports.
The syllabus for this unit is that of CHEM2401 together with special Advanced material presented in the theory and/or practical programs. The lectures cover fundamental consideration of molecular electronic structure and its role in molecular reactivity and spectroscopy and includes applications of spectroscopy in environmental studies. It also covers the organic chemistry of aromatic systems, aldehydes and ketones, organometallic reagents, carbohydrates and DNA.

CHEM 2912 **Chemical Structure and Stability (Adv)**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. Dr R J Clarke. **Session:** Semester 2. **Classes:** Three lectures per week, seven 1 hour tutorials per semester, eight 4 hour practicals per semester. **Prerequisites:** A WAM of 65 or better and a Credit or better in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (2202 or 2302 or 2402 or 2902 or 2916). **Assessment:** One 3 hour exam plus quizzes, lab reports.
The syllabus for this unit is that of CHEM 2402 together with special Advanced material presented in the theory and/or practical programs. The lectures include the structure, bonding and properties of inorganic compounds and complexes; statistical thermodynamics and thermodynamics; amine chemistry, electrophilic substitution and the chemistry of aromatics, the chemistry of carbonyls, nucleophilic organometallic reagents and organic synthesis and synthetic methods.

CHEM 2913 **Chemistry of Biological Molecules (Adv)**
6 credit points. B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology). Dr R J Clarke. **Session:** Semester 2. **Classes:** Three lectures per week, 1 hour tutorials per semester and five 4 hour practical sessions per semester. **Prerequisites:** CHEM (1902 or 1904 or 1909). 12 credit points of Junior Mathematics. Candidates for the BSc (Molecular Biology & Genetics) must achieve a Credit average in Junior units of study. Candidates for the BSc (Molecular Biotechnology) must achieve a Credit average in Junior units of study and a Distinction average in Junior Chemistry units of study. **Prohibitions:** CHEM (2001 or 2101 or 2301 or 2311 or 2312 or 2403 or 2502 or 2901 or 2903).. **Assessment:** One 3 hour exam plus quizzes, lab reports.
NB: This unit of study is available to students in the Bachelor of Science (Molecular Biology and Genetics) and the Bachelor of Science (Molecular Biotechnology) degree programs only.
This unit of study aims to give students an understanding of the chemistry underlying biological systems. Lectures will cover the mechanisms of organic chemical reactions and their application to biological systems, the molecular basis of spectroscopic techniques used in biological chemistry, analytical chemistry of biological systems, biopolymers and biocolloids and topics from inorganic chemistry of relevance to biological systems (metalloproteins, biomineralisation, etc). There will also be 8 hours of compulsory tutorial workshops. Students must ensure that one complete afternoon from 1.00 pm to 5.00 pm, free from other commitments, is available for the practical work.

CHEM 2915 **Molecular Reactivity & Spectroscopy SSP**
6 credit points. B A, B Sc, B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr R J Clarke. **Session:** Semester 1. **Classes:** Three lectures per week, eleven 1 hour SSP seminars per semester, eight four-hour practicals per semester. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (2001 or 2101 or 2301 or 2311 or 2312 or 2401 or 2502 or 2901 or 2903 or 2911). **Assessment:** One 3 hour exam plus quizzes, assignments, lab reports.
NB: Department permission required for enrolment. The number of places in this unit of study is strictly limited and entry is by invitation only. Enrolment is conditional upon available places.
The lectures for this unit comprise the lectures for CHEM2401 and the Advanced practical program together with special SSP lectures on state-of-the-art topics in chemistry. The topics covered in 2005 were Artificial Molecular Machines, Composite Materials and Nanostructured Inorganic Materials.

CHEM 2916 **Chemical Structure and Stability (SSP)**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. Dr R J Clarke. **Session:** Semester 2. **Classes:** Three lectures per week, eleven 1 hour SSP seminars per semester, eight four-hour practicals per semester. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (1101 or 1901 or 1903 or 1907 or 1908) and CHEM (1102 or 1902 or 1904 or 1909). 6 credit points of Junior Mathematics. **Prohibitions:** CHEM (2202 or 2302 or 2402 or 2902 or 2912). **Assessment:** One 3 hour exam plus quizzes, assignments, lab reports.
NB: Department permission required for enrolment. The number of places in this unit of study is strictly limited and entry is by invitation only. Enrolment is conditional upon available places.
The syllabus for this unit is that of CHEM2402 together with special Advanced material presented in the theory and/or practical programs. In addition, special SSP lectures will be on state-of-the-art topics in chemistry. The topics covered in 2005 were Clusters - Molecules or Little Chunks of Solids?; Obtaining information concerning chemical reactivity and motion from absorption and emission spectra; and Colour and Constitution.

Chemistry Senior units of study
Dr R W Baker
The School of Chemistry offers a choice of 6 credit point units of study to cater for the differing needs and interests of students. Each unit involves two lectures and 4 hours of lab each week.

CHEM 3110 **Biomolecules: Properties and Reactions**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2hr lec & 4hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
DNA, proteins and carbohydrates represent three classes of essential biomolecules present in all biological systems. This unit will cover the structure, reactivity and properties of biomolecules and the building blocks from which these molecules are assembled, their interactions with metal ions and small molecules, and highlight the chemical tools for studying the behaviour of biomolecules. The final section of the unit illustrates how chemists apply the same principles used by Nature in these systems to produce molecular sensors and switches for applications in medicine and industry.

CHEM 3111 **Organic Structure and Reactivity**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2hr lec & 4hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
The structure and shape of organic molecules determines their physical properties, their reaction chemistry as well as their biological/medicinal activity. The determination of this structure and understanding its chemical consequences is of fundamental importance in chemistry, biochemistry, medicinal and materials chemistry. This course examines the methods and techniques used to establish the structure of organic molecules as well as the chemistry which dictates the shapes that they adopt. The first part of the course examines the use of modern spectroscopic methods (nuclear magnetic resonance spectroscopy, infrared spectroscopy and mass spectroscopy) which are used routinely to identify organic compounds. The second part of the course examines the chemical consequences of molecular shapes in more depth and looks at how different molecular shapes arise as a consequence of the mechanism of chemical reactions used to synthesize them.

CHEM 3112 **Materials Chemistry**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2hr lec & 4hr prac/wk. **Assumed Knowledge:** CHEM 2401 and CHEM 2402. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
This course concerns the inorganic chemistry of solid-state materials: compounds that possess 'infinite' bonding networks. The extended structure of solid materials gives rise to a wide range of important chemical, mechanical, electrical, magnetic and optical properties. Consequently, such materials are of enormous technological significance as well as fundamental curiosity. In this course you will learn

how chemistry can be used to design and synthesize novel materials with desirable properties. The course will start with familiar molecules such as C60 and examine their solid states to understand how the nature of chemical bonding changes in the solid state, leading to new properties such as electronic conduction. This will be the basis for a broader examination of how chemistry is related to structure, and how structure is related to properties such as catalytic activity, mechanical strength, magnetism, and superconductivity. The symmetry of solids will be used explain how their structures are classified; how they can transform between related structures when external conditions such as temperature, pressure and electric field are changed; and how this can be exploited in technological applications such as sensors and switches. Key techniques used to characterise solid-state materials will be covered, particularly X-ray diffraction, microscopy, and physical property measurements.

CHEM 3113 **Catalysis and Sustainable Processes**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2hr lee & 4hr prac/wk. **Assumed Knowledge:** CHEM2401 and CHEM2402. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
Almost 90% of manufactured chemicals (from fuels through polymers to drugs) involve at least one catalytic step in their production. Catalysis by enzymes is fundamental to all chemical pathways in living things. This course provides the foundation for a molecular-scale understanding of even the most complex catalysts. It begins by showing how organometallic fundamentals can be used to understand and design transition-metal catalysts. Making use of these concepts, the chemistry involved in surface catalysts will be examined. The course will address two main applications of catalysis. Synthetic polymers (plastics, woven materials, films, coatings, etc.) are the most ubiquitous and diverse of modern materials. These are synthesized by a range of catalytic processes, whose chemistry will be described. It will be shown how the mechanisms of these reactions in turn control the molecular weights of the resulting polymers, as well as other aspects of molecular architecture such as degree of branching. The other major application is the use of porous solids (zeotypes) as acid/base and redox catalysts. Confinement-induced selectivity changes are discussed and related to similar phenomena in enzymatic catalysis. In both applications students will also examine the overall process and look at the reasons behind choice of product, catalyst and reaction design with a specific focus on economy and environmental sustainability.

CHEM 3114 **Metal Complexes: Medicine and Materials**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2hr lee & 4hr prac/wk. **Assumed Knowledge:** CHEM2401 and CHEM2402. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
Coordination compounds, with bonds between a central metal atom and surrounding ligands, play critical roles in biology, biochemistry and medicine, controlling the structure and function of many enzymes and their metabolism. They play similarly vital roles in many industrial processes and in the development of new materials with specifically designed properties. Building on the foundation of crystal field theory, this course offers a comprehensive treatment of the structures and properties of coordination compounds, with a qualitative molecular orbital description of metal-ligand bonds, and their spectroscopic, magnetic and dynamic effects. The exploitation of these properties in medicine and materials will be emphasized.

CHEM 3115 **Synthetic Medicinal Chemistry**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2hr lee & 4hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
The development of new pharmaceuticals fundamentally relies on the ability to design and synthesize new compounds. Synthesis is an enabling discipline for medicinal chemistry - without it, the development of new drugs cannot progress from design to implementation, and ultimately to a cure. This unit will tackle important factors in drug design, and will highlight the current arsenal of methods used in the discovery of new drugs, including rational drug design, high throughput screening and combinatorial chemistry. We will develop a logical approach to planning a synthesis of a particular target structure. The synthesis and chemistry of heterocycles, which comprise some 40% of all known organic compounds and are particularly common in pharmaceuticals, will be outlined. Examples will include important ring systems present in biological systems, such as pyrimidines and purines (DNA and RNA), imidazole and thiazole (amino acids and vitamins) and porphyrins (natural colouring substances and oxygen carrying component of blood). Throughout the course, the utility of synthesis in medicinal chemistry will be illustrated with cases studies such as anti-influenza (Relenza), anaesthetic (benzocaine), anti-inflammatory (Vioxx), antihypertensive (pinacidil) and cholesterol-lowering (Lovastatin) drugs.

CHEM 3116 **Membranes, Self Assembly and Surfaces**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2hr lee & 4hr prac/week. **Assumed Knowledge:** CHEM2401 and CHEM2402. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
Away from the covalent and ionic interactions that hold molecules and solids together, is the world of fragile objects - folded polymers, membranes, surface adsorption and stable molecular aggregates - held together by weak forces such as van der Waals and the hydrophobic effect. The use of molecules rather than atoms as the building blocks means that there are an enormous number of possibilities for stable aggregates with interesting chemical, physical and biological properties, many which still wait to be explored. In this course we examine the molecular interactions that drive self assembly and the consequences of these interactions in supramolecular assembly, lipid membrane formations and properties, microemulsions, polymer conformation and dynamics and range of fundamental surface properties including adhesion, wetting and colloidal stability.

CHEM 3117 **Molecular Spectroscopy & Quantum Theory**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2hr lee & 4hr prac/wk. **Assumed Knowledge:** CHEM2401 and CHEM2402. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
This course will cover the fundamentals of molecular spectroscopy as a modern research tool and as a theoretical basis with which to understand everyday phenomena. This course is aimed at the student wishing a rigorous understanding of the interaction between light and matter. The course teaches the quantum theory needed to understand spectroscopic phenomena (such as the absorption of light) without the need for difficult mathematics. This low level theory is used as a tool with which to understand models of everyday phenomena. The course teaches application and theory, with descriptions of applied spectroscopic techniques. Alongside the coverage of modern spectroscopy, the course provides an accessible treatment of the science behind vision, flames, solar cells and photochemical smog.

CHEM 3910 **Biomolecules: Properties & Reactions Adv**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 lee & 4 prac/wk. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
DNA, proteins and carbohydrates represent three classes of essential biomolecules present in all biological systems. This unit will cover the structure, reactivity and properties of biomolecules and the building blocks from which these molecules are assembled, their interactions with metal ions and small molecules, and highlight the chemical tools for studying the behaviour of biomolecules. The final section of the unit illustrates how chemists apply the same principles used by Nature in these systems to produce molecular sensors and switches for applications in medicine and industry.
Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM 3911 **Organic Structure and Reactivity (Adv)**
6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2hr lee & 4hr prac/wk. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
The structure and shape of organic molecules determines their physical properties, their reaction chemistry as well as their biological/medicinal activity. The determination of this structure andunder-

standing its chemical consequences is of fundamental importance in chemistry, biochemistry, medicinal and materials chemistry. This course examines the methods and techniques used to establish the structure of organic molecules as well as the chemistry which dictates the shapes that they adopt. The first part of the course examines the use of modern spectroscopic methods (nuclear magnetic resonance spectroscopy, infrared spectroscopy and mass spectroscopy) which are used routinely to identify organic compounds. The second part of the course examines the chemical consequences of molecular shapes in more depth and looks at how different molecular shapes arise as a consequence of the mechanism of chemical reactions used to synthesize them.
Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM 3912 **Materials Chemistry (Adv)**

6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2hr lee & 4hr prac/wk. **Assumed Knowledge:** CHEM2401 and CHEM2402. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
This course concerns the inorganic chemistry of solid-state materials: compounds that possess 'infinite' bonding networks. The extended structure of solid materials gives rise to a wide range of important chemical, mechanical, electrical, magnetic and optical properties. Consequently, such materials are of enormous technological significance as well as fundamental curiosity. In this course you will learn how chemistry can be used to design and synthesize novel materials with desirable properties. The course will start with familiar molecules such as C60 and examine their solid states to understand how the nature of chemical bonding changes in the solid state, leading to new properties such as electronic conduction. This will be the basis for a broader examination of how chemistry is related to structure, and how structure is related to properties such as catalytic activity, mechanical strength, magnetism, and superconductivity. The symmetry of solids will be used explain how their structures are classified; how they can transform between related structures when external conditions such as temperature, pressure and electric field are changed; and how this can be exploited in technological applications such as sensors and switches. Key techniques used to characterise solid-state materials will be covered, particularly X-ray diffraction, microscopy, and physical property measurements.
Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM 3914 **Metal Complexes: Medic. & Mater. (Adv)**

6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2hr lee & 4hr prac/wk. **Assumed Knowledge:** CHEM2401 and CHEM2402. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
Coordination compounds, with bonds between a central metal atom and surrounding ligands, play critical roles in biology, biochemistry and medicine, controlling the structure and function of many enzymes and their metabolism. They play similarly vital roles in many industrial processes and in the development of new materials with specifically designed properties. Building on the foundation of crystal field theory, this course offers a comprehensive treatment of the structures and properties of coordination compounds, with a qualitative molecular orbital description of metal-ligand bonds, and their spectroscopic, magnetic and dynamic effects. The exploitation of these properties in medicine and materials will be emphasized.
Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM 3915 **Synthetic Medicinal Chemistry (Adv)**

6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2hr lee & 4hr prac/wk. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
The development of new pharmaceuticals fundamentally relies on the ability to design and synthesize new compounds. Synthesis is an enabling discipline for medicinal chemistry - without it, the development of new drugs cannot progress from design to implementation, and ultimately to a cure. This unit will tackle important factors in drug design, and will highlight the current arsenal of methods used in the discovery of new drugs, including rational drug design, high throughput screening and combinatorial chemistry. We will develop a logical approach to planning a synthesis of a particular target structure. The synthesis and chemistry of heterocycles, which comprise some 40% of all known organic compounds and are particularly common in pharmaceuticals, will be outlined. Examples will include important ring systems present in biological systems, such as pyrimidines and purines (DNA and RNA), imidazole and thiazole (amino acids and vitamins) and porphyrins (natural colouring substances and oxygen carrying component of blood). Throughout the course, the utility of synthesis in medicinal chemistry will be illustrated with cases studies such as anti-influenza (Relenza), anaesthetic (benzocaine), anti-inflammatory (Vioxx), antihypertensive (pinacidil) and cholesterol-lowering (Lovastatin) drugs.
Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM 3916 **Membranes, Self Assembly & Surfaces (Adv**

6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2hr lee & 4hr prac/wk. **Assumed Knowledge:** CHEM2401 and CHEM2402. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
Away from the covalent and ionic interactions that hold molecules and solids together, is the world of fragile objects - folded polymers, membranes, surface adsorption and stable molecular aggregates - held together by weak forces such as van der Waals and the hydrophobic effect. The use of molecules rather than atoms as the building blocks means that there are an enormous number of possibilities for stable aggregates with interesting chemical, physical and biological properties, many which still wait to be explored. In this course we examine the molecular interactions that drive self assembly and the consequences of these interactions in supramolecular assembly, lipid membrane formations and properties, microemulsions, polymer conformation and dynamics and range of fundamental surface properties including adhesion, wetting and colloidal stability.
Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

CHEM 3917 **Mol. Spectroscopy & Quantum Theory (Adv)**

6 credit points. B A, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2hr lee & 4hr prac/wk. **Assumed Knowledge:** CHEM2401 and CHEM2402. **Prerequisites:** WAM of 65 or greater and a Credit or better in: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916 or ((2403 or 2913) and MOBT2102)). **Assessment:** One 3hr exam, prac reports.
This course will cover the fundamentals of molecular spectroscopy as a modern research tool and as a theoretical basis with which to understand everyday phenomena. This course is aimed at the student wishing a rigorous understanding of the interaction between light and matter. The course teaches the quantum theory needed to understand spectroscopic phenomena (such as the absorption of light) without the need for difficult mathematics. This low level theory is used as a tool with which to understand models of everyday phenomena. The course teaches application and theory, with descriptions of applied spectroscopic techniques. Alongside the coverage of modern spectroscopy, the course provides an accessible treatment of the science behind vision, flames, solar cells and photochemical smog.
Advanced students attend the same lectures as the normal-level students but with the addition of a special seminar series comprising one lecture a week for 12 weeks.

Chemistry Honours

A/Prof C J Kepert
The Honours program in the School of Chemistry gives students the opportunity to get involved in a research program in an area that is of interest to them. It provides training in research techniques and experience using modern research instrumentation. The Honours program adds a new dimension to the skills that the students have acquired during their undergraduate years and enhances their immediate employment prospects and, more significantly, their future career potential. All students with a sound record in Chemistry are encouraged to apply for entry to the Honours program. The School of Chemistry offers a wide range of possible projects in all areas of contemporary chemistry including Biological and Medicinal

Chemistry, Synthesis and Catalysis, Physical and Theoretical Chemistry, Supramolecular Chemistry, Polymers and Colloids and Chemical Spectroscopy. Details of available projects are contained in the School's Honours Booklet that is available from the School's Information Desk. In the Honours year, each student undertakes a research project under the supervision of a member of staff; writes a thesis which explains the problem; outlines the research undertaken and the results obtained; attends advanced lecture courses, normally given by leaders in their field from overseas or Australia; attends research seminars and undertakes additional written assessment. Further information is available from the Honours Coordinator, or atwww.chem.usyd.edu.au/honours.html.

Civil Engineering

The Department of Civil Engineering is part of the Faculty of Engineering. In addition to providing professional training in this branch of engineering it offers units of study to students enrolled in the Faculty of Science majoring in Mathematics, Physics, Chemistry, Geology, Computer Science or Soil Science.

The most relevant units of study are CIVL2201 - Structural Mechanics, CIVL2230 - Introduction to Structural Concepts and Design, CIVL2410 Soil Mechanics, and CIVL2611 Fluid Mechanics. Details regarding these units of study can be obtained from the Faculty of Engineering Handbook. These units of study are intended first to demonstrate the application of scientific principles in an engineering context. The second intention is to introduce the application of this understanding to analysis and design in civil engineering.

As well as the above units of study, Faculty of Science students are invited to enrol in other civil engineering units of study, provided they have the appropriate assumed knowledge.

Double Degree

Some BSc graduates, who have passed all four of the above four units of study within the Department of Civil Engineering, may obtain a Bachelor of Engineering degree in Civil Engineering after an additional two years' study, following the award of the BSc. Students wishing to undertake this option must apply through UAC and compete on the basis of academic merit. Prospective students are advised to discuss their plans with the Department of Civil Engineering before enrolment. Further details regarding admission to the BE in Civil Engineering may be obtained from the Engineering Faculty Office in the Engineering Faculty Building.

Computational Science

Computational Science unit coordinator: Dr Mike Wheatland

Computational Science is an interdisciplinary major offered within the BSc. It focuses on scientific problem solving using computers. It covers the formulation and analysis of problems, the use of software packages and programs to solve these problems computationally, simulations and modelling, mathematical and numerical analysis, high performance super-computing, graphics, visualisation and programming.

Graduates with computational science skills are in strong and increasing demand in scientific research, industry, government and finance, particularly for their analytic and problem solving skills and their specific expertise in computing.

The major in Computational Science can include a wide range of electives to suit individual interests, selected from computationally oriented offerings from various departments and schools from across the Faculty. Table 1 lists the core Senior units and electives, as well as Junior options. COSC units are described below. For descriptions of other units see their separate entries under the contributing school or department.

COSC 1001 **Computational Science in Matlab**

3 credit points. B A, B E, B Sc, B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** one lhr lecture, one 2hr practical. **Assumed Knowledge:** HSC Mathematics. **Prohibitions:** May not be counted with COSC 1901.. **Assessment:** Two assignments (20%), practical work, including practical exam (40%), theory exam (40%).

This unit of study focuses on scientific problem solving and data visualisation using computers and is complementary to COSC 1002. Students will learn how to solve problems arising in the natural sciences and mathematics using core features of the problem solving environment MATLAB, with a choice of problems from various areas of science at each stage. Emphasis will be placed on graphical display and visualisation of data and solutions to problems. No previous knowledge of programming is assumed.

Textbooks

Recommended reference:

Hahn, B.D Essential MATLAB for Scientists & Engineers, 2nd Ed, Butterworth-Heinemann, Oxford, 2002.

COSC 1901 **Computational Science in Matlab (Adv)**

3 credit points. B A, B E, B Sc, B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** one lhr lecture, one 2hr practical. **Assumed Knowledge:** HSC Mathematics. **Prerequisites:** UAI of at least 90, or COSC 1902, or a distinction or better in COSC 1002, SOFT (1001, 1002,1901 or 1902). **Prohibitions:** May not be counted with COSC 1001.. **Assessment:** Two assignments (20%), practical work, including practical exam (40%), theory exam (40%).

This unit of study is the advanced version of COSC 1001 and is complementary to COSC 1902. The subject matter is very similar but more challenging problems will be covered and some additional programming and visualisation techniques will be used.

Textbooks

Recommended reference:

Hahn, B.D Essential MATLAB for Scientists & Engineers, 2nd Ed, Butterworth-Heinemann, Oxford, 2002.

COSC 1002 **Computational Science in C**

3 credit points. B A, B E, B Sc, B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** one lhr lecture, one 2hr practical. **Assumed Knowledge:** HSC Mathematics. **Prohibitions:** May not be counted with COSC 1902.. **Assessment:** Two assignments (20%), practical work, including practical exam (40%), theory exam (40%).

This unit of study focuses on scientific problem-solving using computers and is complementary to COSC 1001. Students will learn how to solve problems arising in the natural sciences and mathematics using core features of the language C, with a choice of problems from various areas of science at each stage. No previous knowledge of programming is assumed.

Textbooks

Recommended references:

Gottfried B. Schaum's Outlines Programming with C, McGraw-Hill 1996.

Press, Teukolsky, Vetterling and Flannery. Numerical Recipes in C, The Art of Scientific Computing, 2nd edn, Cambridge Press 1992.

COSC 1902 **Computational Science in C (Adv)**

3 credit points. B A, B E, B Sc, B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** one lhr lecture, one 2hr practical. **Assumed Knowledge:** HSC Mathematics. **Prerequisites:** UAI of at least 90, or COSC 1901, or a distinction or better in COSC 1001, SOFT (1001, 1002,1901 or 1902). **Prohibitions:** May not be counted with COSC 1002.. **Assessment:** Two assignments (20%), practical work, including practical exam (40%), theory exam (40%).

This unit of study is the advanced version of COSC 1002 and is complementary to COSC 1901. The subject matter is very similar, but more challenging problems will be covered and some additional programming techniques will be used.

Textbooks

Recommended references:

Gottfried B. Schaum's Outlines Programming with C, McGraw-Hill 1996.

Press, Teukolsky, Vetterling and Flannery. Numerical Recipes in C, The Art of Scientific Computing, 2nd edn, Cambridge Press 1992.

Electrical Engineering

The School of Engineering is located in Building J03.

The School of Electrical Engineering website is:-

http ://www. ee.usyd. edu.au/ugrad/

Environmental Science

Environmental Science

Environmental Science is an applied interdisciplinary field concerned with the environment around us, regardless of whether it is natural or human-made, and how we can utilize or manage it for our benefit. It draws on a wide range of science-based disciplines and applications, from ecology to solar power, analytical chemistry to geomorphology. Environmental Science is also concerned with the social issues involved, including environmental law and policy, sustainability, resource economics, urban planning, and environmental ethics. Environmental scientists and managers need to have a broad knowledge base and the ability to be flexible and innovative in their application of such knowledge. Consequently, the emphasis of the Environmental Science program is placed upon studies that span and integrate several disciplines, involve adaptive problem solving, and develop new skills and expertise. In particular, the Environmental Science program looks to supplement studies in the science disciplines with units that provide complimentary information on environmental issues that not only show how the sciences interact in the environment but how humans impact upon it.

Currently, Environmental Science can only be undertaken through the specialist degree, the Bachelor of Science (Environmental). For the requirements of this degree, please refer to the Table IB BSc(Environmental) entry. BSc(Environmental) students must do all of the ENVI units of study listed below.

Environmental Studies

Environmental Studies is the examination of the human interactions with the natural and built environment. It encapsulates the fundamental social aspects of sustainability, environmental impact, law, ethics, development, energy use, economics and politics. In order to properly cover this material, the ENVI units are taught by various staff from within the Faculties of Science, Architecture and Law. Consequently, the ENVI units are complimentary to studies not only in the physical and natural Science disciplines but also to the social disciplines.

A major in Environmental Studies constitutes the completion of 24 credit points of Senior units as listed in Table 1, including at least 12 credit points of Senior ENVI units of study listed below. Study of at least one Intermediate ENVI unit is highly recommended.

ENVI 1002 **Geomorphic Environments**

6 credit points. B L W Sc, B Sc (Environmental), UG Study Abroad Program. Dr Stephen Gale. **Session:** Semester 1. **Classes:** 3 lee & prac/tut/wk. **Assessment:** One 2hr exam, class work.

NB: This unit of study is available to students in the Bachelor of Science (Environmental) and the Bachelor of Land & Water Science only.

This unit of study introduces Earth's geophysical environments, from the origin and development of the planet through to its evolution and structure. Following this, the unit investigates the evolution of the physical environment, with particular examination given to the hydrosphere and landforms.

ENVI 2111 **Conservation Biology and Applied Ecology**

6 credit points. B Res Ec, B Sc (Environmental), UG Study Abroad Program. Dr Dieter Hochuli. **Session:** Semester 1. **Classes:** 3 lee and 2 prac/week. **Prerequisites:** 24 credit points of Junior Science units, including 12 credit points of Junior Biology. **Prohibitions:** ENVI2001. **Assessment:** Essays, tute papers, exam.

This topic examines the role of conservation biology and applied ecology in environmental science, examining pattern and process in natural systems and evaluating how these are being affected by pervasive anthropogenic impacts. Focusing on the conservation, assessment of impacts and the restoration of natural systems, we consider the range of ecological issues environmental scientists must address. We examine the extent of environmental problems; derive explanations of why and how they are occurring and address management options for resolving them. We will derive general principles for these by addressing case studies, chosen from Australian examples when possible. The aim of this unit is for you to understand the processes that go into solving environmental problems from an ecological perspective and how to identify management options.

ENVI 2112 **Atmospheric Processes and Climate**

6 credit points. B Res Ec, B Sc (Environmental), UG Study Abroad Program. Dr Chris Dey, Prof Scott Kable. **Session:** Semester 2. **Classes:** 3 lee and 2 prac/week. **Prerequisites:** 24 credit points of Junior Science units, including 12 credit points of Junior Chemistry or Physics. **Prohibitions:** ENVI2002. **Assessment:** Assignments, tutorial papers, exam.

This unit of study investigates the physical and chemical characteristics of our atmosphere, as well as the natural processes that occur within it and how these contribute to the climate we live in. Topics such as atmospheric structure, photochemical processes, and weather will be examined. The effects of ocean circulation are investigated, particularly examining the ocean's importance as a source/sink for atmospheric constituents and as a heat regulator. The impact of glaciation is also examined, including sources, quantity, magnitude of threat, and the potential impact to our climate, are then explored. Finally, the unit examines issues surrounding climate change and the modelling of these changes.

ENVI 3111 **Environmental Law and Ethics**

6 credit points. B Hort Sc, B L W Sc, B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), B Sc Agr, UG Study Abroad Program. Dr Gerry Bates Dr Rachel Ankeny. **Session:** Semester 1. **Classes:** 4 lec/wk. **Assumed Knowledge:** Intermediate Environmental Science. **Prerequisites:** 12 credit points of Intermediate Science or Agriculture units. **Prohibitions:** ENVI3001, ENVI3003.. **Assessment:** Essays, tutorial papers.

This unit of study covers topics in environmental law and ethics. The environmental law component provides an overview of all laws in Australia pertaining to environmental matters and looks at a number of environmental issues at the various levels of analysis, policy making, implementation of policy, enforcement, and dispute resolution. It also provides a broad background to the political and economical issues as they relate to the legal issues involved. It also examines international environmental law, particularly examining how these influence and affect our local policies. The ethics component helps students develop thoughtful and informed positions on issues in environmental ethics using arguments derived from traditional ethics as well as environmentally specific theories. Ethical conflicts are often inevitable and difficult to resolve but using the resources of philosophical ethics and regular reference to case studies, students can learn to recognize the values and considerations at stake in such conflicts, acknowledge differing viewpoints and defend their own well considered positions.

ENVI 3112 **Environmental Assessment**

6 credit points. B Hort Sc, B L W Sc, B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), B Sc Agr, UG Study Abroad Program. Dr John Dee Dr Scott Kable. **Session:** Semester 2. **Classes:** 4 lec/wk. **Assumed Knowledge:** Intermediate Environmental Science. **Prerequisites:** 12 credit points of Intermediate Science or Agriculture units. **Prohibitions:** ENVI3002, ENVI3004.. **Assessment:** Essays, tutorial papers, report.

This unit of study is composed of two components: environmental impact assessment and risk assessment. The former is generally concerned with issues related to environmental impact assessment and builds toward the process of producing an EIS/EIA. Moor specifically it seeks to establish a critical understanding of the theory and practice of environmental impact studies/statements (EIS) and environmental impact assessment processes (EIA) from both the positive (scientific) and normative (value) perspectives. Emphasis is placed on gaining skills in writing and producing an assessment report, which contains logically ordered and tightly structured argumentation that can stand rigorous scrutiny by political processes, the judiciary, the public and the media. The risk assessment component considers a more chemical approach to the assessment of risk and issues of safety with respect to chemicals, ecotoxicology and the environment.

ENVI 3113 **Environmental Economics and Planning**

6 credit points. B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Tihomir Ancev Dr John Dee. **Session:** Semester 1. **Classes:** 4 lec/wk and 1 tut/wk. **Assumed Knowledge:** Intermediate Environmental Science. **Prerequisites:** 12 credit points of Intermediate Science or Agriculture units. **Prohibitions:** ENVI3001. **Assessment:** Essays, tutorial papers/reports, exam.

This unit of study covers topics in environmental economics and planning. The economics component will provide a general introduction to theoretical concepts and empirical work in natural resource and environmental economics. The basic economic concepts of consumption, choice, utility, production, costs, property rights, market failures, externalities and government institutions will be defined and discussed. A set of tools and methods that are used in resource and environmental economics practice will be introduced. These comprise optimisation, econometric and simulation models, as well as more specific methods such as benefit-cost analysis and non-market valuation methods. The concepts and tools will be applied to specific problems related to land and water. In particular, discussions will be focused on some of the following problems: agricultural and urban water supply and demand, water quality, land use, sustainable development. The planning component introduces the field of urban and regional planning and its application in Australia. The lectures cover a broad range of topics including urbanization, the scope of plan making, policy and implementation, development control measures, principles of environmental sustainability, indigenous development issues, and planning in regional and urban settings relevant to both the built and natural environment. The implications for planning in a liberal-pluralist political environment and the need to reconcile a wide range of competing interests in land use and natural resources will also be investigated.

ENVI 3114 **Energy and the Environment**

6 credit points. B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Chris Dey. **Session:** Semester 2. **Classes:** 2 lec/wk, 1 tut/wk and 3 field trips. **Assumed Knowledge:** Junior Physics or Intermediate Environmental Science. **Prerequisites:** 12 credit points of Intermediate Science or Agriculture units. **Prohibitions:** ENVI3001, PHYS3600.. **Assessment:** Essays, tutorial papers, field reports, exam.

This unit covers the following aspects of energy and the environment: energy use; electrical power generation including alternate methods such as wind turbines; the environmental impact of energy use and power generation including the enhanced greenhouse effect; transportation and pollution; energy management in buildings; solar thermal energy, photovoltaics, and nuclear energy; and, socio-economic and political issues related to energy use and power generation.

Honours in the Bachelor of Science (Environmental)

Students of sufficient merit may be admitted to an Honours course in the Bachelor of Science (Environmental). In the Honours year, a student will undertake an interdisciplinary research exercise in association with one or more supervising members of the academic staff at the University of Sydney, write a thesis based upon the research, and attend advanced lecture units of study and seminars as required by their supervisor(s). The Honours year is not only rewarding but

enjoyable as well, and marks the transition period where a student becomes a research collaborator.

Eligible students can choose to complete Honours in the following Science Subject Areas: Agricultural Chemistry, Biology, Chemistry, Geography, Geology, Marine Science, Microbiology, or Soil Science. (Please note that there are no Honours units of study entitled 'Environmental Science'.)

Financial Mathematics and Statistics

This is an interdisciplinary major offered in the Faculty of Science consisting of several core units and a number of elective units from mathematics, statistics and information technologies. The program is designed to meet the need for high level quantitative and modelling skills in the banking, insurance, stockbroking and finance industries without constraining students to a full major in mathematics or statistics. Graduates with specifically strong mathematical and statistics backgrounds are in very high demand.

The core units Optimisation and Financial Mathematics (MATH2070/2970) and Financial Mathematics 2 (MATH3015/3933) are the backbone of the program and introduce the student to important financial concepts within a mathematical and statistical framework. The core mathematics and statistics units provide the technical base that is required by a quantitative analyst, while the elective units offer the student increased flexibility and additional opportunities to develop related skills.

Students completing the program at the Advanced Level may continue into Fourth Year Honours where a number of further Financial Mathematics and Statistics units are on offer. It is envisaged that students completing the Honours program will not only be highly trained in quantitative finance, but will also be well prepared for active research in the field.

Students should refer to Table 1 for an enrolment guide and to entries under the contributing Schools for unit of study descriptions.

Geosciences

The School of Geosciences is located within two buildings on the main campus's Eastern Avenue. The Edgeworth David Building houses staff with expertise in Geology and Geophysics as well as the office of the Head of School. Staff with expertise in Geography are located on the second floor of the Madsen Building.

All Geography, Geology and Geophysics enquiries can be made at either of the School's two administrative offices:

Edgeworth David building, Room 312, 8.30am - 4.30pm, Mon - Fri

Madsen Building, Room 469, 8.30am - 4.30pm, Mon - Fri

The School of Geosciences website is located at:-

http://www.geosci.usyd.edu.au/

Geography

The School of Geosciences offers units of study in the discipline areas of Geography as well as Geology & Geophysics. Students may take a major in either of these disciplines. Geography is the study of earth as the home of people. It is a varied and versatile discipline that has become central to the sciences and social sciences over recent years. As the need to find solutions to issues of environmental sustainability, population change and globalisation have become more challenging, the skills and knowledge of geographers have come to the forefront. Geographers use cutting-edge computer technologies such as Geographic Information Systems (GIS), remote sensing and the use of global databases, along with observation and survey techniques that involve fieldwork. As a student of geography at the University of Sydney, you will participate in an array of learning environments that complement traditional lecture and tutorial classes. These may include computer classes, laboratory-based practicals, and off-campus field trips to areas in Australia and overseas. Through these educational forums, students gain first-hand exposures to real-life problems. Students are encouraged to think critically about the world, and the relationships between people, environments and places. Through the development of critical thinking capabilities, practical skills and knowledge of contemporary global geographical debates, geography graduates are well-positioned in the job market across a range of professions.

The School is located in the Madsen Building on the main campus's Eastern Avenue. Students who wish to obtain advice concerning the units of study described below should approach School advisors during the enrolment week or the unit coordinators during semester. Further information is available at www.geosci.usyd.edu.au, as well as in the Geosciences' student handbook available from the School's administrative office (second floor, Madsen Building).

Geography Junior units of study

Geography offers two Junior units of study: Geography 1001 in the February Semester provides an introduction to physical geography, while Geography 1002 in the July Semester introduces human geography. Entry into both these units of study does not require any prior knowledge. Both units of study consist of three lectures and a two hour practical class per week. Morning lectures are repeated in the afternoon.

GEOG 1001 **Biophysical Environments**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr Gale & Dr Melissa Neave. **Session:** Semester 1. **Classes:** 3 lee & 3hr prac/wk. **Assessment:** One 2hr exam, 1500w report, prac assignments.

This unit of study provides an introductory explanation of the evolution of the physical world. It begins by considering the earth's place in the universe, its origin and its development, and the nature and evolution of the earth's structure. This is followed by an investigation of the evolution of the earth's physical environment and its development to its present stage over time. With this background, the unit of study goes on to examine the earth's hydrosphere and atmosphere and the major landforms produced by the interaction of atmospheric and ocean processes with the earth's surface, including fluvial, arid, coastal and glacial systems.

GEOG 1002 **Human Environments**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Res Ec, B Sc, B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Prof. Connell & Dr W Pritchard. **Session:** Semester 2. **Classes:** 3 lee & 3hr prac/wk. **Assessment:** One 2hr exam, 2000w essay, prac exercises.

This unit of study examines the political, cultural and economic processes that create the contemporary global society. The subject matter includes questions about the evolution of cities and regional economies, the social, economic and environmental consequences of globalisation, and the uneven development of countries across the globe. Examples of these issues are drawn from Australia and overseas, with a particular focus on the Asia-Pacific. This unit of study is designed to attract and interest students who wish to pursue geography as a major within their undergraduate career, but also has relevance to students wishing to understand the way geographers seek to understand the contemporary world. It includes a half day field trip to suburbs adjacent to the university, in order to observe processes of social and cultural change within Sydney's inner urban environments.

Geography Intermediate units of study

Geography intermediate units of study are listed below. A student would normally select two sequential units of study from one of the following three streams:

Physical Geography and Geomorphology (GEOG 2311 and GEOG 2321);

Environmental Geography (GEOG 2411 and GEOG 2421), or

Human Geography (GEOG 2511 and GEOG 2521).

Nevertheless, subject to the prerequisites for each individual unit of study, students may vary their enrolment across these streams. The School of Geosciences encourages students to construct a sequential ordering of these units that best meets their interests and aspirations.

GEOG 2311 **Landscape Processes**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. A/Prof Deirdre Dragovich, Professor Andy Short. **Session:** Semester 1. **Classes:** 2 lee, 2hr prac/wk, fieldwork. **Prerequisites:** 36cp of Junior units of study, including GEOG 1001 or ENVI (1001 or 1002), or GEOL (1001 or 1002). Students enrolled in the Bachelor of Resource Economics should have 36cp from Junior units of study in Biology (or Land and Water Science), Chemistry and Mathematics. **Prohibitions:** GEOG2001. **Assessment:** One 2hr exam; prac reports; 2000w assignment.

This unit of study is concerned with the morphology and evolution of landscapes and the processes that have formed them. Attention will be directed towards slopes, the basic units of landscapes, and the processes leading to slope development and change in different environments. Landscape features will be examined in relation to evidence of past and present process regimes, especially the way in which these regimes are influenced by climate. Field and practical work will involve interpreting landscapes in the Sydney Region. Other geomorphological environments to be considered are glacial landscapes, periglacial landscapes, karst landscapes, and aeolian (desert) landscapes.

GEOG 2321 **Fluvial and Groundwater Geomorphology**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B L W Sc, B Res Ec, B Sc, B Sc (Environmental), UG Study Abroad Program. Dr Melissa Neave. **Session:** Semester 2. **Classes:** 2 lee & 2 hour prac/week. **Prerequisites:** GEOG(2311 or 2001) or 36 credit points of Junior study including GEOG 1001 or ENVI (1001 or 1002) or GEOL (1001

or 1002 or 1501). Students in the Bachelor of Resource Economics should have 36 credit points of study in Biology (or Land and Water Science), Chemistry and Mathematics. Students in the Bachelor of Land and Water Science should have ENVI1002, 12 credit points of Chemistry, 6 credit points of Biology, BIOM1002. **Prohibitions:** GEOG (2002 or 2302 or 2303) or MARS2002 or MARS2006. **Assessment:** One 2 hr exam, one quiz, one field report, practical exercises.

This unit of study provides an introduction to the fundamentals of fluvial geomorphology (the study of surface water as an agent of landscape change) and groundwater hydrology. The fluvial geomorphology section of the unit will describe the movement of water in stream channels and investigate the landscape change associated with that movement. Topics to be covered will include open channel flow hydraulics, sediment transport processes and stream channel morphology. Practical work will focus on the collection and analysis of field data. The quantity and quality of the groundwater resources are closely linked to geology and fluvial geomorphology. The groundwater section of this unit is based around four common groundwater issues: contamination, extraction, dryland salinity and groundwater-surface water interaction. In the practical component, common groundwater computer models such as FLOWTUBE and MODFLOW will be used to further explore these problems.

Textbooks

Recommended Textbooks: Fetter (2001) & Knighton (1998)

GEOG 2411 **Environmental Change and Human Response**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. A/Prof Deirdre Dragovich & Dr Eleanor Bruce. **Session:** Semester 1. **Classes:** (2 lee, 2prac)/wk, fieldwork. **Prerequisites:** 36 cp of Junior units of study, including GEOG (1001 or 1002) or ENVI (1001 or 1002) or GEOL (1001 or 1002). **Prohibitions:** GEOG2101. **Assessment:** One 2hr exam; 1500w prac report; 1500w assignment.

Environmental change occurs at time scales from seconds to centuries or longer, from the sudden and catastrophic to gradual transformations barely noticeable at human time scales. Some kinds of environmental change are caused largely by humans, but in other cases humans are unable to control the forces of nature. Environmental change is explored in these different categories, including land degradation and desertification, and salinity; and how humans are both implicated in these problems and respond to them. Included in the unit of study will be a variety of techniques for the analysis of environmental problems, especially the use of geographic information systems (GIS) as a way to organise, integrate and interpret spatial information. We will also consider some fundamental questions that emerge from the use of GIS techniques in spatial analysis including the representation of spatial features, handling data uncertainty and decision support.

GEOG 2421 **Resource and Environmental Management**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Philip McManus. **Session:** Semester 2. **Classes:** (2 lee, 1 tut, 1 prac)/wk; fieldwork. **Prerequisites:** 36cp of Junior Units of Study, including GEOG (1001 or 1002) or ENVI (1001 or 1002). **Prohibitions:** GEOG2102. **Assessment:** One 2hr exam, 2000w essay, field report, tutorial paper, prac report.

This unit of study forms an intermediate level treatment of environmental geography and natural resource management. It is designed to evaluate human interaction with the biophysical environment and use of the earth's surface and its resources. Emphasis is upon human impacts on environments through social, economic and political processes and through deliberate decision making and management. Policy responses are considered at a range of scales. The unit of study examines the nature and characteristics of selected resource processes with reference to Australian and other national and international contexts, and, on a more global and regional scale, focuses on the changing relationship between people and environments in tropical Asia and the Pacific. A field trip is integral to the unit of study.

GEOG 2511 **Economic and Political Geography**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Bill Pritchard. **Session:** Semester 1. **Classes:** (2 lee, 2 prac)/wk. **Prerequisites:** 36 credit points of Junior units of study, including GEOG (1001 or 1002) or ENVI (1001 or 1002) or ECOP (1001 or 1002). **Prohibitions:** GEOG2201. **Assessment:** One 2 hr exam; 2000w essay, tutorial papers, prac reports.

This unit of study asks why economic development occurs where it does. It raises questions about issues such as globalisation, the capacity for trade and investment to contribute to global economic growth, and the roles of multinational corporations in the global economy. Major lines of thinking about these issues are introduced and subjected to critical examination. In practical classes, students are exposed to key tools in economic geography, including the use of GIS to map patterns of employment and economic change, and the ways in which researchers can analyse corporate behaviour. This unit of study does not require assumed knowledge of economics. Rather, it uses the insights and perspectives of human geography to critically debate regional, national and global economic issues.

Textbooks

Recommended: Dicken, P. (2003) Global Shift (SAGE, London)

GEOG 2521 **Urban and Cultural Geography**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Prof John Connell & Dr Kurt Iveson. **Session:** Semester 2. **Classes:** 2 lee, 2hrprac/wk. **Prerequisites:** 36 credit points of Junior units of study, including GEOG (1001 or 1002) or ENVI (1001 or 1002) or ECOP (1001 or 1002). **Prohibitions:** GEOG2202. **Assessment:** One 2 hr exam, 2000w essay, prac reports.

By their very nature, cities are full of different people doing all sorts of different things. These activities all have their own geographies - people make the most of spaces available to them, and they shape and produce new kinds of urban space through their actions. However, these geographies are neither stable nor uncontested. Sometimes, groups of people clash with each other and with urban authorities in trying to make space for different cultural practices.

This unit of study focuses on the construction of urban and cultural processes in developed countries, with particular attention to Australia. There is an emphasis on the ways that social constructions such as gender, class and ethnicity are manifested spatially. Attention is also given to the spatial character of phenomena such as religion, music, migration and creativity. At the completion of this unit of study, students will possess an awareness of key geographical debates in these fields, as well as a practical understanding of the social and cultural processes which come together to create contemporary urban societies.

Geography Senior units of study

Students may select from any of the units listed below. The requirements for a Major in Geography are defined in Table 1. As with intermediate units, students normally take senior units of study in one of four overlapping streams, Geomorphology, Environmental Geography, Human Geography, and Geographic computer methods, although students may construct sequential ordering of these units that best meets their interests and aspirations:

Geomorphology: GEOS3009/ GEOS3909 (Coastal Environments & Processes); GEOS3015/GEOS3915 (Environmental Geomorphology), GEOS3016/ GEOS3916 (Seafloor Processes & Imaging)

Environmental Geography: GEOS3017/GEOS3917 (Global Energy-Exploration & Exploitation), GEOS3014/GEOS3914 (GIS in Coastal Management), GEOS3018/GEOS3918 (Rivers: Science, Policy and Management), GEOS3511/GEOS3911 (Understanding Australia's Regions)

Human Geography: GEOS3053/GEOS3953 (Asia-Pacific field school-Assessment A), GEOS3054/GEOS3954 (Asia-Pacific field school-Assessment B), GEOG3522/GEOG3922 (Cities and citizenship), GEOS3521/GEOS3921 (Sustainable Cities), GEOS3512/GEOS3912 (Contemporary Global Geographies)

Geographic computer methods: GEOS3014 (GIS in Coastal Management), GEOS3007 (Remote Sensing: Imaging the Earth) GEOS3016 (Seafloor Processes & Imaging).

GEOS 3009 **Coastal Environments** & **Processes**

6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Prof Andy Short, Dr Michael Hughes. **Session:** Semester 1. **Classes:** 2hr lee & 2hr prac/wk, weekend excursion. **Prerequisites:** (6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)). **Prohibitions:** GEOS3909, MARS3003, MARS3105.. **Assessment:** One 2hr exam, two 1500wreports.

*NB: * Geoscience is the disciplines of Geography, Geology and Geophysics.*

Australian coastal environments are dynamic systems responding to input sediments and processes as well as solid boundary conditions. The first half of this unit focuses on high-energy wave and wind dominated coastal systems; in particular the beach-surf zone, dunes and barriers, including their Holocene/Quaternary evolution. The regional impact of waves, tides, embayments, and other environmental parameters in controlling morphology are addressed. The second half of this unit focuses on the smaller-scale processes controlling beach-surf zone morphology. In particular, how waves and currents drive beach and bar morphodynamics via sediment transport. The practical program uses real data sets collected during recent research programs and during a weekend field excursion, and they address issues specifically relevant to Australia's coastline.

Textbooks

Recommended:
Short, A D (ed), 1999, Beach and Shoreface Morphodynamics. John Wiley & Sons, Chichester, 379 pp.
Course notes will be available from the Photocopy Centre.

GEOS 3909 **Coastal Environments and Processes (Adv)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Prof Andy Short & Dr Michael Hughes. **Session:** Semester 1. **Classes:** 3 lee, 6 hr prac/wk, fieldwork. **Prerequisites:** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))). **Prohibitions:** GEOS3009, MARS3003, MARS3105. **Assessment:** One 2hr exam, two 1500w reports.
NB: A distinction average in prior Geography or Geology units is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.
Advanced students will complete the same core lecture material as for GEOS3009, but will carry out more challenging projects, practical, assignments and tutorials.

GEOS 3014 **GIS in Coastal Management**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Eleanor Bruce, Dr Peter Cowell. **Session:** Semester 2. **Classes:** 3hr lee & 2hr prac/wk. **Prerequisites:** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **Prohibitions:** GEOS3914, MARS3104.. **Assessment:** One 2hr exam, 2 project reports, quizzes.
*NB: * Geoscience is the disciplines of Geography Geology and Geophysics.*
Coastal Management is about how scientific knowledge is used to support policy formulation and planning decisions in coastal environments. The course links coastal science to policy and practice in management of estuaries, beaches and the coastal ocean. The principles are exemplified through specific issues, such as coastal erosion, pollution, and impacts of climate-change. The issues are dealt with in terms of how things work in nature, and how the issues are handled through administrative mechanisms. These mechanisms involve planning strategies like Marine Protected Areas and setback limits on civil development in the coastal zone. At a practical level, the link between science and coastal management is given substance through development and use of'decision-support models'. These models involve geocomputing methods that entail application of simulation models, remotely sensed information, and Geographic Information Systems (GIS). The course therefore includes both principles and experience in use of these methods to address coastal-management issues. (It thus also extensive use of computers.) Although the focus is on the coast, the principles and methods have broader relevance to environmental management in particular, and to problem-solving in general. That is, the course has vocational relevance in showing how science can be exploited to the benefit of society and nature conservation.
Textbooks
Burrough, P.A. and McDonnell, R.A., 1998. Principles of Geographical Information Systems: Spatial information systems and geostatistics. Oxford University Press, Oxford, 333 pp.

GEOS 3914 **GIS in Coastal Management (Advanced)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr Peter Cowell & Dr Eleanor Bruce. **Session:** Semester 2. **Classes:** 2 lee, 3 hr prac/wk comprising 1x1hr prac. demonstration and 1x2 hr prac. **Prerequisites:** Distinction average in 12 credit points of intermediate geography or geology units or 12 credit points of intermediate marine science units. **Prohibitions:** GEOS3014, MARS3104. **Assessment:** One 2hr exam, 1 x 2 hr exam, project work, 2 x prac-based project reports, biweekly progress quizzes.
NB: Department permission required for enrolment. A distinction average in prior Geography Geology or Marine Science units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.
Advanced students will complete the same core lecture material as for GEOS3014, but will carry out more challenging projects, practicals, assignments and tutorials.

GEOS 3015 **Environmental Geomorphology**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. A/Professor Deirdre Dragovich, Dr Stephen Gale. **Session:** Semester 2. **Classes:** 2hr lee, 1hr tut & 2hr prac/wk or equivalent. **Assumed Knowledge:** Intermediate geomorphology/physical geography/ geology. **Prerequisites:** 24 credit points of Intermediate units, including 6 credit points of Intermediate Geography. **Prohibitions:** GEOS3915. **Assessment:** One 2hr exam, practical & field reports.
The first part of this unit deals with the effects of weathering on the physical and the built environment, and considers the relationship between soil and landforms. The second part investigates the environmental changes that have taken place since the end of the last glacial, the time when the world's climates and environments first took on a recognisably modern form. It deals specifically with changes to the Australian biophysical environment and will focus on human-environmental impacts, both under pre-European and post-contact conditions.

GEOS 3915 **Environmental Geomorphology (Advanced)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. A/Prof Deirdre Dragovich & Dr Stephen Gale. **Session:** Semester 2. **Classes:** (3 lee, 6 prac)/wk, fieldwork. **Prerequisites:** Distinction average in 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study. **Prohibitions:** GEOS3015. **Assessment:** One 2hr exam, two 1500w essays, prac and field reports.
NB: Department permission required for enrolment.
Advanced students will complete the same core lecture material as for GEOS3015, but will carry out more challenging projects, practical, and field reports.

GEOS 3018 **Rivers: Science, Policy and Management**
6 credit points. B A, B L W Sc, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Mel Neave. **Session:** Semester 1. **Classes:** 2 lee, 1 tut, 8prac/wk, fieldwork. **Prerequisites:** (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)). **Prohibitions:** GEOS3918. **Assessment:** One 2 hr exam, two 1500 word essays.
The unit of study is concerned with understanding the functioning of river catchments from both natural science and social science perspectives, at a variety of scales. The catchment as a morphodynamic process-response system is addressed with an emphasis on the relationships between processes and landform entities. Similarly, relationships within social, economic, and political systems are explored within the catchment context, with particular emphasis on the interactions between the social system and bio-physical system. Empirical context for the unit will primarily be drawn from the Murray-Darling, Mekong, and Hawkesbury-Nepean catchments. Fieldwork in the latter is integral to the unit of study.
Textbooks
Gordon, et al., 2004. Stream Hydrology: An Introduction for Ecologists.

GEOS 3918 **Rivers: Science and Management** (Adv)
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr Melissa Neave. **Session:** Semester 1. **Classes:** 2 lee, 1 tut, 8 prac/wk, fieldwork. **Prerequisites:** Distinction average in (24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)). **Prohibitions:** GEOS3018. **Assessment:** One 2hr exam, two 1500w essays.
Advanced students will complete the same core lecture material as for GEOS3018, but will carry out more challenging projects, practical, assignments and tutorials.

GEOS 3511 **Understanding Australia's Regions**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr Bill Pritchard. **Session:** Semester 1. **Prerequisites:** 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **Prohibitions:** GEOS3911. **Assessment:** One 2 hr exam; 2000w essay, tutorial papers, fieldtrip or alternative report.
Regional difference in Australia is becoming more acute. Australia is becoming more acute. This has major implications for the life chances and economic prospects of people across Australia. Thus unit of study examines these issues, using extensive case study material and introducing students to new approaches in regional development theory to account for and explain this state of affairs. A non-compulsory field trip of approximately five days duration to rural Australia is a component of this unit. (Students who cannot or who do not wish to attend the trip complete an alternative assignment.) This unit provides students with a solid grounding for graduate employment or further studies in the field of regional development.
Textbooks
Beer, A., Maude, A. & Pritchard, B. (2003) Developing Australia's Regions (UNSW Press, Sydney).

GEOS 3512 **Contemporary Global Geographies**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 1 x 2h lee, 1 x 1hr tut, 1 x 2hr prac/week. **Prerequisites:** 6 credit points of Intermediate units of study in Geography. **Prohibitions:** GEOS3912. **Assessment:** 1 x 2hr exam, 1 x 2000 word essays, 1 x 3000 word practical report, tutorial participation.
This unit of study provides students with detailed exposure to contemporary thematic areas of human geography research. It seeks to apply the conceptual material introduced in intermediate human geography units of study to 'real-life' research problems, as a platform for engaging students with research issues, frameworks, conceptual debates, methods, and problem-solving techniques. For 2006 the content of this unit of study will involve assessment of the geographical implications of tourism. Lectures and practical classes will cover relevant conceptual and methodological issues, and will involve economic, cultural, political and environmental themes. It will primarily focus on Australia and the Asia-Pacific region.

GEOG 3521 **Sustainable Cities**
6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Phil McManus. **Session:** Semester 2. **Classes:** 2 lee + 2 prac/tut per week. **Prerequisites:** 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **Prohibitions:** geog3921, GEOG3202. **Assessment:** One 2 hr exam; 2000w essay, tutorial papers, prac reports.

This unit of study involves an integrated series of lectures, practicals and field visits. It develops themes introduced in Intermediate units in Geography relating to sustainability, focusing on the ways we manage urban regions. This involves discussion of topics including Utopian visions for cities, urban history, ecological footprint analysis, bioregionalism, transport options, urban form and urban policy with reference to sustainable futures.

GEOG 3921 **Sustainable Cities (Adv)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr Phil McManus. **Session:** Semester 2. **Classes:** 2 lee & 2 hr prac/tut per week. **Prerequisites:** Distinction average 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **Prohibitions:** GEOG3521, GEOG3202. **Assessment:** One 2 hr exam; 2000w essay, tutorial papers, prac reports.
Advanced students will complete the same core lecture material as for (UoS code), but will carry out more challenging projects, practicals, assignments and tutorials.

GEOS 3522 **Cities and Citizenship**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Kurt Iveson. **Session:** Semester 2. **Classes:** 2hr lee, 1hr tut & 2hr prac/wk. **Prerequisites:** 6 credit points of intermediate geography. **Prohibitions:** GEOG3203, GEOS3922. **Assessment:** One 2 hr exam, one 2000-word essay, one 3000-word practical report, tutorial participation.
What does it mean to be a 'citizen', and what has this got to do with cities? This module explores the urban dimension of contests over the meaning of citizenship. The first half of the module will consider historical configurations of urban citizenship, from the Greek city-states of antiquity through to imperial, colonial and industrial cities. The second half of the module will then focus on contemporary globalising cities. A series of case studies will consider the production of new configurations of urban citizenship across a range of cities in the world, looking at issues such as: asylum-seekers and the city; children and the city; homelessness in the city; 'culture jamming' and new forms of urban protest; trans-national social movements. The module will involve a substantial practical component, encouraging students to draw on their own experiences of city life to reflect on the meanings of citizenship.

GEOS 3922 **Cities and Citizenship (Advanced)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr Kurt Iveson. **Session:** Semester 2. **Classes:** 2 lee & 2 hr prac/wk. **Prerequisites:** Distinction average in 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **Prohibitions:** GEOS3522. **Assessment:** One 2 hr exam; e-Sim assignments, tutorial papers.
Advanced students will complete the same core lecture material as for GEOS3022, but will carry out more challenging projects, assignments and tutorials.

GEOS 3053 **Asia-Pacific Field School-Assessment A**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. A/Prof Phil Hirsch. **Session:** SI Intensive. **Classes:** 5 weeks intensive. 8 modules of 3 lectures each; 10 full days' equivalent fieldwork; 20 hours small group work. **Prerequisites:** 6 credit points of Intermediate units of study in Geography. **Corequisites: GEOS3054. Prohibitions:** GEOG3201, GEOS3953. **Assessment:** One tutorial paper, one extended field report.
NB: Department permission required for enrolment. Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.
The unit of study can be taken only in coincidence with GEOS 3054 and with prior permission from the unit of study coordinator. It constitutes a Field School run over a five- week period in January-February, prior to the commencement of the semester. In 2006 the Field School will be held in Thailand, Laos and Viet Nam. In other years it may be held in the South Pacific (Vanuatu and Fiji). It is run in close association with local universities, whose staff and students participate in some components of the course. It focuses on environmental and development issues in the context of rapid social change. Places are limited, and students interested in the 2007 Field School should indicate expression of interest tojconnell@mail.usyd.edu.au before the end of June 2006.

GEOS 3953 **Asia-Pacific Field School-A (Adv)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics). **Session:** SI Intensive. **Classes:** 5 weeks intensive. 8 modules of 3 lectures each; 10 full days' equivalent fieldwork; 20 hours small group work. **Prerequisites:** Distinction average in 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study. **Corequisites:** GEOS3954. **Prohibitions:** GEOS3053. **Assessment:** Fieldwork reports.
NB: Department permission required for enrolment. Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.
The unit of study can be taken only in coincidence with GEOS 3954 and with prior permission from the unit of study coordinator. Advanced students will will carry out more challenging fieldwork reports.

GEOS 3054 **Asia-Pacific Field School-Assessment B**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. A/Prof Phil Hirsch. **Session:** SI Intensive. **Classes:** 5 weeks intensive. 8 modules of 3 lectures each; 10 full days' equivalent fieldwork; 20 hours small group work. **Prerequisites:** 6 credit points of Intermediate units of study in Geography. **Corequisites:** GEOS3053. **Prohibitions:** GEOG3201, GEOS3954. **Assessment:** Two tutorial papers, one exam.
NB: Department permission required for enrolment. Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.
The unit of study can be taken only in coincidence with GEOS 3053 and with prior permission from the unit of study coordinator. It constitutes a Field School run over a five- week period in January-February, prior to the commencement of the semester. In 2006 the Field School will be held in Thailand, Laos and Viet Nam. In other years it may be held in the South Pacific (Vanuatu and Fiji). It is run in close association with local universities, whose staff and students participate in some components of the course. It focuses on environmental and development issues in the context of rapid social change. Places are limited, and students interested in the 2007 Field School should indicate expression of interest tojconnell@mail.usyd.edu.au before the end of June 2006.

GEOS 3954 **Asia-Pacific Field School-B (Adv)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics). A/Prof Phil Hirsch. **Session:** SI Intensive. **Classes:** 5 weeks intensive. 8 modules of 3 lectures each; 10 full days' equivalent fieldwork; 20 hours small group work. **Prerequisites:** Distinction average in 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study. **Corequisites:** GEOS3953. **Prohibitions:** GEOS3054. **Assessment:** Fieldwork reports.
NB: Department permission required for enrolment. Students must contact the unit coordinator no later than the end of June in the year before taking this Unit.
The unit of study can be taken only in coincidence with GEOS3953 and with prior permission from the unit of study coordinator. Advanced students will carry out more challenging fieldwork reports.

Geography Honours
Offered: February and July.
Students contemplating Geography Honours will be invited to complete a preliminary registration form in the July Semester. Following the publication of the July semester Senior Geography unit of study results, those eligible students who have preregistered will be invited to formally enrol. They are required to consult the Head of Geography as soon as possible after the publication of the results concerning choice of topic and the appointment of a staff supervisor. Preliminary work should begin shortly after the publication of these results.
Honours students are required to undertake formal coursework during their first semester and to participate in seminars throughout the year as arranged. They will be required to study original problems, working as appropriate in the field, the laboratory, libraries, and in some instances in conjunction with other university or government departments. A dissertation of not more than 20 000 words must be submitted during the second semester, followed by an examination that may include both written and oral work.

Geology **and Geophysics**
The School of Geosciences offers units of study in the discipline areas of Geology & Geophysics as well as Geography. Students may take a major in either of these disciplines. Geology & Geophysics provides a unifying context for understanding the workings of the earth system and the dynamic structural and ecosystem relationships between the continents and the oceans. Global climate change and shrinking resources have heightened our sense of dependence on Earth as a complex system. Geology & Geophysics provides students with an understanding of change on Earth, its origin, plate tectonics, surface processes, evolution of life and geologic time. Intermediate units highlight the role of the earth system in all natural phenomena, including those of concern to humans such as geo-biodiversity, salinity, seismicity, volcanic hazards, climate and sea level change. Senior units of study cover methods of field data collection and provide access to cutting edge computing and data resources used for turning such observations into knowledge. Students will acquire the skills necessary for employment in all areas of sustainable exploration and management of our natural, mineral and energy resources. The School is located in the Madsen Building on the main campus's Eastern Avenue. Students who wish to obtain advice concerning the units of study described below should approach School advisors during the enrolment week or the unit coordinators during semester. Further information is available at www.geosci.usyd.edu.au, as well as in the Geosciences' student handbook available from the School's administrative office (second floor, Madsen Building).

Geology & Geophysics Junior units of study
Geology and Geophysics offers two Junior units of study: Geology 1001 in the February Semester and Geology 1002 in the July Semester. Entry into both these units of study does not require any prior knowledge. Both units of study consist of three lectures and three hours of laboratory work per week.

GEOL 1001 **Earth and its Environment**
6 credit points. B A, B E, B Sc, B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Prof P Davies (Co-ordinator). **Session:** Semester 1. **Classes:** 3 lee & prac or tut/wk. **Assumed Knowledge:** No previous knowledge of Geology assumed. **Prohibitions:** GEOL1501. **Assessment:** One 2hr exam, class and field work.
The aim of this unit of study is to provide students with an understanding of how the Earth system works, its origin, plate tectonics, surface processes, evolution of life and geologic time. The crises in resources and fossil fuel and implications for our economy will be discussed. Our own impact on the Earth will be assessed, together with the role of geologists in protecting and monitoring the environment. Students will learn the techniques used to decipher the history and evolution of the Earth, and dating sediments and rocks. Laboratory classes and a one day field trip in the Sydney region will involve exercises in observing and describing Earth materials and in interpreting Earth history from geological information, including fossils and maps.

GEOL 1002 **Earth Processes and Resources**
6 credit points. B A, B E, B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr Tom Hubble (Co-ordinator). **Session:** Semester 2. **Classes:** 3 lee & prac or tut/wk. **Assumed Knowledge:** No previous knowledge of Geology assumed. **Prohibitions:** GEOL 1501. **Assessment:** One 2hr exam, class and field work.
This unit of study examines the chemical and physical processes involved in mineral formation, volcanoes, and metamorphism. Lectures and laboratory sessions on mountain building processes and the formation of ore deposits will lead to an understanding of the driving forces in geology that originate deep within the Earth's interior. Processes such as weathering, erosion and nature of sedimentary environments are related to the origin of the Australian landscape. In addition to laboratory classes there is a weekend field excursion to Lithgow. Students will be required to pay hostel accommodation for one night on the Lithgow excursion. Continuing students may also enrol in an optional post-semester field excursion to volcanic terranes of New Zealand (North Island).

GEOL 1501 **Engineering Geology 1**
6 credit points. B E. **Session:** Semester 2. **Classes:** 39 hrs lee, 26 hrs lab. Field excursions in the Sydney region, as appropriate. **Assumed Knowledge:** No previous knowledge of Geology assumed. **Prohibitions:** GEOL 1002. **Assessment:** Practical laboratory work, assignment, and a combined theory and practical exam.
Course objectives: To introduce basic geology to civil engineering students.
Expected outcomes: Students should develop an appreciation of geologic processes as they influence civil engineering works and acquire knowledge of the most important rocks and minerals and be able to identify them.
Syllabus summary: Geological concepts relevant to civil engineering and the building environment. Introduction to minerals; igneous, sedimentary and metamorphic rocks, their occurrence, formation and significance. General introduction to physical geology and geomorphology, structural geology, plate tectonics, and hydrogeology. Associated laboratory work on minerals, rocks and mapping.
Textbooks
T West, Geology Applied to Engineering; or
A Holmes, Principles of Physical Geology 4th Edition.

GEOL 1902 **Earth Materials and Resources (Advanced)**
6 credit points. B A, B E, B Sc, B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Dr Geoff Clarke. **Session:** Semester 2. **Classes:** (3 lee, 3 pracs)/wk, fieldwork. **Assumed Knowledge:** No previous knowledge of Geology assumed. **Prohibitions:** GEOL1002. **Assessment:** One 2 hour exam, prac reports.
NB: Department permission required for enrolment. Departmental permission is required for enrolment; a UAI above 93 or a Distinction in GEOLIOOl is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.
This unit has the same objectives as GEOL 1002 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in week 1 of semester. This unit of study may be taken as part of the BSc (Advanced).

Geology and Geophysics Intermediate units of study
Intermediate Geology & Geophysics units of study build on the material presented in junior units of study and present a balanced and wide-ranging coverage of the discipline with a focus on geological environments, plate tectonics, geological materials, climate change, field data collection and life through time. Students wishing to take a major in Geology & Geophysics should enrol in GEOL2111 & GEOL2123, or their advanced equivalents GEOL2911 & GEOL2923 which require permission of the unit of study coordinators. Students are also encouraged to enhance their knowledge of the discipline by taking GEOL2112 and GEOL2124. Lectures, practicals, and field excursions are compulsory components of all six of these units of study.

GEOL 2111 **Volcanic Hazards and Solutions**
6 credit points. B A, B E, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Derek Wyman. **Session:** Semester 1. **Classes:** 2 lectures, 1 tutorial and two 2-hour pracs per week for first five weeks; 2 lectures and one 2-hour prac per week for remaining weeks. **Prerequisites:** GEOL 1002 or ENVI1002 or equivalent and 24 credit points of Junior Science units of study. **Prohibitions:** GEOL2001, CIVL2409. **Assessment:** One 2 hour exam, practical reports, group presentation, field work.
This unit expands upon the concepts introduced during the Junior units of study in Geology and uses a problem solving approach to investigate geological processes and materials that are important for Australia and the Pacific region. Igneous systems are examined as the basis for strategies that identify, predict, and mitigate volcanic hazards. The unit of study develops a thorough understanding of the analytical techniques applied to evaluating these hazards and provides students with the knowledge required to integrate geochemical and geological data. The unit includes a two- to three-day field trip to study an extinct volcano in NSW. A field excursion to volcanic terranes of New Zealand (North Island) is optional.
Textbooks
Printed notes are available.

GEOL 2112 **Environmental Geology and Climate Change**
6 credit points. B A, B E, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Gavin Birch, Prof Peter Davies. **Session:** Semester 1. **Classes:** (2 lee, 2 prac)/wk, fieldwork. **Prerequisites:** 24 credit points of Science units of study. **Prohibitions:** GEOL2004. **Assessment:** One 2 hr exam, practical reports, group presentation, fieldwork report.
The Earth Sciences provide an essential framework for understanding environmental changes that arise from short-term and long-term geological processes. This unit of study introduces students to important geological phenomena that can impact detrimentally on society and the environment. As the welfare of much of the world's population is sensitive to climate change, a major component of the course will include an examination of global climate change over a variety of timescales ranging from millions of years to tens of years. The record of recent climate change and projections of future climate change will be reviewed in the context of their natural and human causes.

GEOL 2123 **Geological Methods**
6 credit points. B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Prof. Peter Hatherley. **Session:** Semester 2. **Classes:** (2 lee, 2 prac)/wk, fieldwork. **Assumed Knowledge:** Ability to identify common rocks and rock-forming minerals; ability to read and interpret simple geological maps and predict 3D relationships from a map; knowledge of the geological time scale; cognizance of the main chemical and physical processes involved in: mineral formation; modification of the interior of the Earth; common surface processes and sedimentary environments; volcanoes; and metamorphism. **Prerequisites:** GEOL (2111, 2911 or 1501) and 18 credit points of Engineering or Science units of study. **Prohibitions:** GEOL (2202 or 2002 or 2005). **Assessment:** One 2 hour exam, prac reports, field report.
This unit of study develops student's knowledge of the techniques employed in geological and geophysical investigations. Students will enhance their understanding of common geological environments and the physical, chemical, and biological processes that form sedimentary rocks, metamorphic rocks, and natural resources. This knowledge will then be applied to developing three-dimensional geological models and solving geological problems in the field and laboratory. The unit will include a five-day excursion to the Canberra area. Students will be required to pay the cost of hostel accommodation.

GEOL 2124 **Fossils and Time**
6 credit points. B A, B E, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. A/Prof Dietmar Miiller, Dr Julie Dickinson. **Session:** Semester 2. **Classes:** (2 lee, 2hr prac)/wk. **Prerequisites:** 24 credit points of Junior Science units of study. **Prohibitions:** GEOL2003, CIVL2409. **Assessment:** One 2 hour exam, prac reports, group presentation.

This palaeontology and stratigraphy unit of study is aimed at geoscientists, archaeologists, biologists, marine and environmental scientists who use fossils or stratigraphic data to determine ages, environments or evolutionary lineages. It provides an overview of fossil biodiversity, concentrating on invertebrate animals but also covering vertebrates, plants and microorganisms, with the emphasis on those groups that are most environmentally or stratigraphically useful. It also considers the main methods of stratigraphic correlation and age determination, concentrating on litho- and bio-stratigraphy but also covering the more modem techniques of chemo-, magneto- and sequence-stratigraphy as well as radiometric age dating.
Textbooks
Printed notes are available.

GEOL 2911 **Volcanic Hazards & Solutions (Advanced)**
6 credit points. B A, B E, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Derek Wyman. **Session:** Semester 1. **Classes:** 2 lectures, 1 tutorial and 2-hour pracs for first five weeks; 2 lectures and 2-hour prac for remaining weeks; and fieldwork. **Prerequisites:** GEOL (1002 or 1902) or ENVI1002 or equivalent. **Prohibitions:** GEOL2111, GEOL2001. **Assessment:** One 2 hour exam, practical reports, group presentation, field work.
NB: Department permission required for enrolment. Department permission required for enrolment. A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.
This unit has the same objectives as GEOL2111 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in week 1 of semester. This unit of study may be taken as part of the BSc (Advanced).

GEOL 2923 **Geological Methods (Advanced)**
6 credit points. B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Geoff Clarke. **Session:** Semester 2. **Classes:** (2 lee, 2 prac)/wk, fieldwork. **Prerequisites:** GEOL2111 orGEOL2911. **Prohibitions:** GEOL2123. **Assessment:** One 2 hour exam, prac and field reports, group presentation.
NB: Department permission required for enrolment. Department permission required for enrolment. A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.
This unit has the same objectives as GEOL2123 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in week 1 of semester. This unit of study may be taken as part of the BSc (Advanced).

MARS 2005 **Global Oceans (Introduction)**
6 credit points. B A, B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Michael Hughes. **Session:** Semester 1. **Classes:** 3 lec/wk + 6 tutorials/sem + 1 day field trip. **Prerequisites:** 24 credit points of Junior units of study from Science Discipline Areas. **Prohibitions:** MARS2001. **Assessment:** One 2hr exam, assignments.
NB: This is a qualifying unit for some Senior Marine Science units. Some Senior electives may have additional prerequisites.
This course is split into two sections: physical and geological oceanography. Major physical oceanography topics include the physical and chemical properties of ocean water, ocean circulation, waves and tides. Major geological oceanography topics include the origins and geological history of ocean basins, ocean volcanism, sediments and continental margins. Both the regional oceanography and continental shelf of Australia are emphasised. Although this is principally a lecture-based course, you will receive feedback on your understanding of the course content through regular assignments and six tutorials. The learning outcome you should expect at the end of the course is a broad knowledge of the fundamental concepts in physical and geological oceanography, and their particular relevance to the Australasian region. This provides the necessary background for senior-level Marine Science courses in which you will learn more advanced concepts, and also become involved in the practical and field-based aspects of marine science.
Textbooks
H.V. Thurman and E.A. Burton, 2001. Introductory Oceanography, 9th Edition. Prentice Hall

MARS 2905 **Global Oceans (Introduction) (Advanced)**
6 credit points. B A, B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Michael Hughes. **Session:** Semester 1. **Classes:** 3 lec/wk + 6 tutorials/sem + 1 day field trip. **Prerequisites:** 24 credit points of Junior Science units. **Prohibitions:** MARS2005, MARS200L. **Assessment:** One 2hr exam, 8 assignments, participation in field trip activities.
NB: This unit of study is available to advanced students only.
Qualified students will participate in alternative components of MARS2005, while sharing the same lectures. The content and nature of these components may vary from year to year.
Textbooks
H.V. Thurman and E.A. Burton, 2001. Introductory Oceanography, 9th Edition. Prentice Hall.

Geology and Geophysics Senior units of study
Students may select from any of the units listed below. Those who complete a major in this discipline are well-prepared for a variety of careers and generally gain employment with government bodies or commercial organisations with interests in areas such as resource exploration, finance, environmental management, construction, education and research. The requirements for a Major in Geology & Geophysics are defined in Table 1. The following suggested combinations of senior units of study are provided to assist students who wish to pursue a professional career in a particular area of Geology & Geophysics. Students are advised that most employers regard completion of an Honours year to be the entry level to the profession and should note that the field studies unit GEOL3008 or GEOL3908 is a compulsory component of the Geology & Geophysics major.
Students can select Units from the four streams to obtain vocational training for careers in Resource Exploration, geological hazard management or environmental and engineering site investigation, computer methods in geology and geophysics, or a more general training, as outlined below:
Resource Exploration: GEOS3008/3908 (Geology field school), GEOS3004/3904 (Geophysics, Imaging, Oil/Ore Production), GEOS3006/3906 (Mineral Deposits) and one of GEOS3003 (Dynamics of Continents and Basins), GEOS3007/GEOS3907 (Remote Sensing: Imaging the Earth), and GEOS3016/ GEOS3916 (Sealloor Processes & Imaging) or GEOS3017/GEOS3907 (Global Energy-Exploration & Exploitation);
Geological hazard management or environmental and engineering site investigation: GEOL3008/3908 (Geology field school), GEOS3003/ GEOS3903 (Dynamics of Continents and Basins), GEOS3004/3904 (Geophysics, Imaging, Oil/Ore Production) and GEOS3007/3907 (Remote Sensing: Imaging the Earth).
Computer methods in geology & geophysics: GEOS3008/3908 (Geology field school), GEOS3004/ GEOS3904 (Geophysics, Imaging, Oil/Ore Production), GEOS3007/ GEOS3907 (Remote Sensing: Imaging the Earth), GEOS3014/GEOS3914 (GIS in Coastal Management), GEOS3016/GEOS3016 (Sealloor Processes & Imaging).
General training: GEOS3008/3908 (Geology field school), GEOS3003 (Dynamics of Continents and Basins) and GEOS3007/3907 (Remote Sensing: Imaging the Earth) as well as one of GEOS3009 (Coastal Environments & Processes), GEOS3017 (Global Energy-Exploration & Exploitation), GEOS3006 (Mineral Deposits), GEOS3007 (Remote Sensing: Imaging the Earth), and GEOS3018/ GEOS3918 (Rivers: Science, Policy & Management).

GEOS 3003 **Dynamics of Continents and Basins**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. A/Prof Dietmar Muller, Dr Patrice Rey. **Session:** Semester la. **Classes:** 4 hrs lectures, practicals per week, excursion. **Prerequisites:** (6 credit points of Intermediate Geoscience units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)). **Prohibitions:** GEOL3101, GEOS3903. **Assessment:** One 2 hr theory exam, class work.
The Earth's crust hosts mineral and energy resources that have sustained our civilisation over the past five thousand years. These resources are formed along plate boundaries and in sedimentary basins. They are the by-products of dynamic and thermal processes that have affected the litho sphere since its formation in the Archaean. This unit focuses on the understanding the thermal and mechanical aspects of lithospheric deformation and basin formation and evolution. The main topics of this module include: Mantle convection, oceanic lithospheric evolution, heat transfer in the lithosphere; Isostasy and vertical motion of the Earth's surface; Plate boundaries, body forces and the dynamic of the Earth's lithosphere; Rheology of the lithosphere; Continental break-up and the formation of continental margins and basins; Thermo-mechanics of sedimentary basins; Thermo-mechanics of orogenesis; and, Thermal consequences and tectonic feedback of geodynamic processes. Practical classes are designed to enhance computational and communication skills as well as building a profound knowledge in Tectonics and Geodynamics. The course is relevant to all students interested in using computational methods to learn how the Earth works.

GEOS 3903 **Dynamics of Continents & Basins (Adv)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. A/Prof Dietmar Muller, Dr Patrice Rey. **Session:** Semester 1. **Classes:** 4 hrs lectures, practicals per week, excursion. **Prerequisites:** Distinction average in ((6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906))). **Prohibitions:** GEOL3101, GEOS3003. **Assessment:** 2 hr theory exam, class work.
NB: A Distinction in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.
This unit has the same objectives as GEOS3003 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in week 1 of semester. This unit of study may be taken as part of the BSc (Advanced).

GEOS 3004 **Geophysics, Imaging, Oil/Ore Production**
6 credit points. B A, B Sc, B Sc (Environmental), UG Study Abroad Program. Prof Iain Mason. **Session:** Semester 2a. **Classes:** (12 hrs lees, pracs)/wk. **Prerequisites:** 12 credit points of Intermediate Science units of study or CIVL2409. **Prohibitions:** GEOP3202, GEOS3904. **Assessment:** 2 hr theory exams, computer class work.
This unit examines the use of computerised geophysical techniques to map high value sites. Sites of interest range from oil fields through mine sites to archaeological digs. Data sources include micro-gravity surveying, magnetism and aero-magnetism; radiometry, short-and long-range surveillance and tracking. The course is designed around the reality that while people, as much as data acquisition and reduction technology have influenced modern geophysics, recently, major strides have been made in digital data acquisition and reduction. Lectures deal with the creation, inversion and application of 2D and 3D potential and wave fields. Lab classes extend skills in computer aided image processing.

GEOS 3904 **Geophysics, Imaging, Oil/Ore Prod (Adv)**
6 credit points. B Sc, B Sc (Environmental), UG Study Abroad Program. Prof Iain Mason. **Session:** Semester 2a. **Classes:** 12 hours per week lectures, practical, computer-based exercises. **Prerequisites:** Distinction average in 24 credit points of Intermediate Science Units, or Distinction in (GEOL2923 or CIVL2409). **Prohibitions:** GEOL3202, GEOS3004. **Assessment:** 2 hr theory exams, practicals per week.
NB: Department permission required for enrolment. A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.
This unit has the same objectives as GEOS3004 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in the week prior to the field camp which is usually in the break between semester 1 and 2. This unit of study may be taken as part of the BSc (Advanced).

GEOS 3006 **Mineral Deposits & Spatial Data Analysis**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Derek Wyman. **Session:** Semester 2b. **Classes:** (12 hrs lees, pracs)/wk, field excursion. **Prerequisites:** 12 credit points of Intermediate Science units of study or CIVL2409. **Prohibitions:** GEOL3103, GEOS3906. **Assessment:** 2 hr theory exams, class work and field reports.
Global-scale tectonics and continental growth are examined in terms of their relationships to mineral deposits over the last 3.5 billion years. Deposits of metals and precious gems are linked to igneous rocks and hydrothermal fluids, which provide the basis for exploration strategies, account for specific ore deposit characteristics, and determine appropriate mining techniques. Representative ore deposits from New South Wales, Australia, and overseas will be included as case studies for a wide array of mineralisation types. Practical components of the course will introduce specimens of ore deposits and associated rocks and the spatial analysis of geological data at the global to district scale. In addition to laboratory classes there will be a four-day field excursion to active and historic mining sites in New South Wales.

GEOS 3007 **Remote Sensing: Imaging the Earth**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Geoff Clarke. **Session:** Semester 1b. **Classes:** (12 hrs of lees, pracs)/wk. **Prerequisites:** 12 credit points of Intermediate Science units of study or CIVL2409. **Prohibitions:** GEOL3101. **Assessment:** Practical work, a 2-hour computer-based examination and an assignment.
This unit of study initially addresses the evolution of the Australian landscape, involving tectonic influences, long-term climate variation and the effects of bedrock weathering. The unit then provides a comprehensive introduction to the use and manipulation of computer-based imaging techniques at the microscopic to macroscopic scales in the Earth Sciences. The application of image analysis as a tool in the interpretation of remote sensing techniques to geological terranes and landscapes is covered in computer-based practical exercises that use a mixture of Landsat thematic mapper, airborne radiometric and magnetic databases. Integrated lectures and laboratory exercises focus on the use of processed images in mineral exploration, tectonic analysis, and environmental studies.

GEOS 3907 **Remote Sensing: Imaging the Earth (Adv)**
6 credit points. B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Geoff Clarke. **Session:** Semester 1b. **Classes:** (12 hrs lees, pracs)/wk. **Assumed Knowledge:** GEOL (2001 or 2202). **Prerequisites:** Distinction average in 16 credit points of Intermediate Science subjects or CIVL2409. **Prohibitions:** GEOL3101 or GEOS3007. **Assessment:** One 2-hour exam, prac. reports, and assignments.
This unit has the same objectives as GEOS3007 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in week 1 of semester. This unit of study may be taken as part of the BSc (Advanced).

GEOS 3008 **Field Geology and Geophysics**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Patrice Rey, Prof Peter Hatherley. **Session:** S2 Intensive. **Classes:** (weeks 1-7) 14 days of field work. **Prerequisites:** 12 credit points of Intermediate GEOS units. **Prohibitions:** GEOL3103, GEOS3908. **Assessment:** The field work will be assessed by written reports (up to 30 pages in total) and field exercises.
This unit is considered an essential component all Geology and Geophysics majors. All students will undertake a range of exercises, but concentrate on aspects that emphasise their chosen major: (1) field mapping and the analysis of geological objects in the field, in weakly to complexly deformed sedimentary and volcanic sequences; (2) field investigations of mineral deposits and their relationships to host rocks; and (3) the practical application of magnetic and electrical methods commonly employed in the search for mineral deposits. The field course complements other subject areas in Geology & Geophysics and will give students experience in the field identification of rocks and minerals, regional geology, stratigraphy, structure and rock relationships. Students will be required to pay the cost of hostel-style accommodation during field work, which may involve camping.

GEOS 3908 **Field Geology and Geophysics (Advanced)**
6 credit points. B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Geoff Clarke. **Session:** S2 Intensive. **Classes:** 14 days of fieldwork. **Prerequisites:** Distinction average in 12 credit points of Intermediate GEOS units. **Prohibitions:** GEOS3008. **Assessment:** Written reports and field exercises.
NB: Department permission required for enrolment. A Distinction average in prior Geology units of study is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.
This unit has the same objectives as GEOS3008 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in week prior to the field camp which is usually in the break between semester 1 and 2. This unit of study may be taken as part of the BSc (Advanced).

GEOS 3009 **Coastal Environments** & **Processes**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Prof Andy Short, Dr Michael Hughes. **Session:** Semester 1. **Classes:** 2hr lee & 2hr prac/wk, weekend excursion. **Prerequisites:** (6 credit points of Intermediate Geoscience* units) and (6 further credit points of Intermediate Geoscience or 6 credit points of Physics, Mathematics, Information Technology or Engineering units) or ((MARS2005 or MARS2905) and (MARS2006 or MARS2906)). **Prohibitions:** GEOS3909, MARS3003, MARS3105.. **Assessment:** One 2hr exam, two 1500w reports.
*NB: * Geoscience is the disciplines of Geography Geology and Geophysics.*
Australian coastal environments are dynamic systems responding to input sediments and processes as well as solid boundary conditions. The first half of this unit focuses on high-energy wave and wind dominated coastal systems; in particular the beach-surf zone, dunes and barriers, including their Holocene/Quaternary evolution. The regional impact of waves, tides, embayments, and other envir-

onmental parameters in controlling morphology are addressed. The second half of this unit focuses on the smaller-scale processes controlling beach-surf zone morphology. In particular, how waves and currents drive beach and bar morphodynamics via sediment transport. The practical program uses real data sets collected during recent research programs and during a weekend field excursion, and they address issues specifically relevant to Australia's coastline.
Textbooks
Recommended:
Short, A D (ed), 1999, Beach and Shoreface Morphodynamics. John Wiley & Sons, Chichester, 379 pp.
Course notes will be available from the Photocopy Centre.

GEOS 3016 **Seafloor Processes & Imaging**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Dietmar Miiller, Dr Julie Dickinson. **Session:** Semester 2. **Classes:** 2hr lee & 2hr prac/wk, one-day excursion. **Prerequisites:** 12 credit points of Intermediate Geoscience or ((one of MARS2005 & MARS2905) and (one of MARS2006 & MARS2906)). **Prohibitions:** GEOS3916, MARS3005, MARS3106.. **Assessment:** One 2hr exam, prac reports.
*NB: * Geoscience is the disciplines of Geography, Geology and Geophysics.*
Exploring the sediments and rocks that make up the continental shelves and deep ocean floor requires the use of remote sensing techniques, and the analysis of geological and geophysical data. This course teaches analytical and interpretive skills in both these areas, with a focus on the interaction of physical, biological and chemical processes on the sea floor. The aim of this course is to provide the student with skills to analyse sea floor environments and interpret a variety of relevant geological and geophysical datasets, including include side-scan sonar, swath-mapping, magnetics, gravity, and seismic reflection data. Students will also gain the skills to investigate marine sedimentary successions. The practical exercises will provide an introduction to standard data analysis tools such as Matlab, and the use of Australian and world data-bases. Students will also be introduced to seafloor samples from the shelf, slope and deep-ocean, where the role of physical and biological activity on the sediment characteristics will be examined.
The course is relevant to students interested in seafloor environments, marine geology and geophysics, and computer-based marine data analysis.

GEOS 3916 **Seafloor Processing and Imaging (Adv)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. A/Prof Dietmar Miiller, Dr Julie Dickinson. **Session:** Semester 2. **Classes:** 4 hrs lectures and practicals per week, one-day excursion. **Prerequisites:** Ditinction average in (12 credit points of Intermediate Geoscience or ((one of MARS2005 & MARS2905) and (one of MARS2006 & MARS2906))). **Prohibitions:** GEOS3016, MARS3005, MARS3106. **Assessment:** 2 hr theory exam, class work.
NB: Department permission required for enrolment.
Advanced students will complete the same core lecture material as for GEOS3016, but will carry out more challenging projects, practicals, assignments and tutorials.

GEOS 3017 **Global Energy-Exploration & Exploitation**
6 credit points. B A, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Prof Peter Davies, Dr Gavin Birch. **Session:** Semester 1. **Classes:** 4hr lec/wk & fieldschool. **Prerequisites:** MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **Prohibitions:** GEOS3917, MARS3008.. **Assessment:** One 2 hr exam, report.
*NB: * Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.*
This unit is aimed at geoscientists, biologists, environmental and marine scientists who are interested in the energy resources, particularly in the context of the evolution of coral reefs and how they have been affected by changing short and long-term environmental conditions. This interdisciplinary unit provides an introduction to offshore energy and coral reefs and explores this complex system in relation to geology, biology and ecology as well as the oceanographic setting. The unit acquaints students with tools currently being used in the industry and is underpinned by modern concepts of basin architecture and petroleum economics. Exploration techniques include the principals and practice of electrical logging, source rock evaluation and reservoir quality assessment. The controlling influence of basin architecture is examined in terms of critical factors such as hydrocarbon source, migration and entrapment are used to demonstrate climatic and tectonic control. Students will also become familiar with the factors and processors that control the structure, morphology, sediments and distribution of coral reefs and how they function as part of larger ecosystem. The unit is based on problem solving by groups and is underpinned by closely integrating geology, geophysics, marine science and economics. The theoretical base developed in course work will be used to solve a real-world exploration case study, using petroleum industry techniques and by simulating an economic competitive environment. The unit will include a 5 day field trip to the Great Barrier Reef. Students will be required to meet associated travel and accommodation costs.

GEOS 3917 **Global Energy Exploration (Advanced)**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Prof Peter Davies (Coordinator), Dr Gavin Birch. **Session:** Semester 1. **Classes:** 4 hrs lectures, practicals per week, excursion. **Prerequisites:** Distinction average in MARS(2005 or 2905) and MARS(2006 or 2906), or 12 credit points of Intermediate Geoscience* units. **Prohibitions:** GEOS3017, MARS3008. **Assessment:** Assignments, fieldwork, 2 hr exam.
*NB: * Geoscience is the disciplines of Geography, Geology and Geophysics. There are a limited number a places available at this fieldschool.*
This unit has the same objectives as GEOS3017 and is suitable for students who wish to pursue aspects of the subject in greater depth. Entry is restricted and selection is made from the applicants on the basis of their performance to date. Students that elect to take this unit will participate in alternatives to some aspects of the standard unit and will be required to pursue independent work to meet unit objectives. Specific details for this unit of study will be announced in meetings with students in week 1 of semester. This unit of study may be taken as part of the BSc (Advanced).

Geology & Geophysics Honours
Offered: February and July.
Suitably qualified students may take Honours in Geology & Geophysics. Students are advised that most employers of graduates in Geology & Geophysics regard completion of an Honours year to be the entry level to the profession. Students are required to undertake a research project under the direction of a supervisor, and submit a thesis of not more than 20,0000 words embodying the results of the investigation.
Students not eligible to take Honours may be given permission to enrol in the graduate Diploma in Science. Further details should be sought from Dr Michael Hughes or the Head of School, preferably 3 to 4 months before enrolment to allow definition of the research project. Details may be obtained from Dr Michael Hughes (ph: 9351 5190 or email: michaelh@mail.usyd.edu.au).

Geology & Geophysics Postgraduate Study
Details concerning fields of postgraduate study in Geology and Geophysics may be obtained from Dr Derek Wyman or the Head of School.

History and Philosophy of Science
History and Philosophy of Science allows students to enrich their knowledge of science and stand back from the specialised concerns of their other subjects by gaining a broader perspective on what science is, how it acquired its current form and how it fits into contemporary society. HPS is particularly relevant for students hoping to make careers in science policy, science administration, science education and science reporting. Any student with a genuine interest in science will derive benefit from study in HPS.
Course Advice
An advisor will be available in the Unit for History and Philosophy of Science during the enrolment period. The Unit is located on Level 4 of the Carslaw Building. More detailed information on courses is available either in a handbook from the Unit office or electronically via the Unit website http://www.usyd.edu.au/hps/.
The Unit for History and Philosophy of Science offers the Junior unit of study Bioethics (HPSC 1000), which analyses and discusses the ethical concerns raised by scientific accomplishments in modern society. Students interested in related topics should consider taking the unit Concepts and Issues in Physical Science (PHYS 1600) offered in the School of Physics. This unit serves as useful background for further studies in HPS and is offered as an Arts unit for all students, including students enrolled in the Faculty of Science.

HPSC 1000 **Bioethics**
6 credit points. B A, B S T, B Sc, UG Study Abroad Program. Dr Rachel Ankeny. **Session:** Semester 1. **Classes:** (3 lee, 1 tut)/wk. **Prohibitions:** HPSC1900. **Assessment:** Short essays, tutorial work, tests.
NB: This Junior unit of study is highly recommended to Intermediate and Senior Life Sciences students.
Science has given us nearly infinite possibilities for controlling life. Scientists probe the origins of life through research with stem cells and embryos. To unlock the secrets of disease, biomedicine conducts cruel experiments on animals. GM crops are sold as the answer to hunger. Organ transplantation is almost routine. The international traffic in human body parts and tissues is thriving. The concept of brain death makes harvesting organs ethically more acceptable. It may also result in fundamental changes in our ideas about life. Sci-

ence has provided new ways of controlling and manipulating life and death. As a consequence, difficult ethical questions are raised in increasingly complex cultural and social environments. This course will discuss major issues in the ethics of biology and medicine, from gene warfare to Dolly the sheep. This unit will be introductory, but a small number of topical issues will be studied in depth. No scientific background beyond School Certificate level will be assumed.
Textbooks
Course reader

HPSC 1900 **Bioethics (Advanced)**

6 credit points. B A, B Sc, B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr Rachel Ankeny. **Session:** Semester 1. **Classes:** 3 lee, 1 tut/wk. **Prohibitions:** HPSCIOOO. **Assessment:** Tutorial work, essays, exam, tutorial participation.
NB: Enrolment in this unit is limited, and will be on a first-come first-served basis.
The topics covered by HPSCIOOO - Bioethics will be treated in more depth, in a special tutorial set aside for Advanced students.
Textbooks
Course reader

HPSC 2100 **The Birth of Modern Science**

6 credit points. B A, B E, B Sc, B Sc (Marine Science), UG Study Abroad Program, UG Summer/Winter School. Dr Ofer Gal. **Session:** Semester 1. **Classes:** (3 lee, 1 tut)/wk. **Prerequisites:** 24 credit points of Junior units of study. **Prohibitions:** HPSC (2002 or 2900). **Assessment:** Short essays, tutorial work, tests.
Modern culture is a culture of science. Modern Western science is the outcome of a historical process of 2,500 years. In this course we investigate how Western knowledge-theoretical, technological and medical-acquired the characteristics of modern science: its specific social structure, contents, values and methods. We will look at some primary chapters of this process, from antiquity to the end of the seventeenth century, and try to understand their implications to understanding contemporary science in its culture. Special emphasis will be given to the scientific revolution of the seventeenth century, which is often described as the most important period in the history of science and as one of the most vital stages in human intellectual history.
Textbooks
Henry, J. The Scientific Revolution and the Origins of Modern Science.
Course reader

HPSC 2101 **What Is This Thing Called Science?**

6 credit points. B A, B E, B Sc, B Sc (Marine Science), UG Study Abroad Program, UG Summer/Winter School. Dr Rachel Ankeny and HPS staff. **Session:** Semester 2, Summer. **Classes:** (3 lee, 1 tut)/wk. **Prerequisites:** 24 credit points of Junior units of study. **Prohibitions:** HPSC (2001 or 2901). **Assessment:** Short essays, tutorial work, tests.
Philosophers of science aim to define what distinguishes creationism from evolutionary theory, or astrology from astronomy, if anything? They give reasons why we can believe that today's theories are improvements over those that preceded them and how we know that what we see and do in scientific practice reflects the nature of reality. This course critically examines the most important attempts to define the scientific method, to draw a line dividing science from non-science, and to justify the high status generally accorded to scientific knowledge. The philosophies of science studied include Karl Popper's idea that truly scientific theories are falsiflable, Thomas Kuhn's proposal that science consists of a series of paradigms separated by scientific revolutions; and Feyerabend's anarchist claim that there are no objective criteria by which science can be distinguished from pseudo-science. This Unit of Study also explores contemporary theories about the nature of science and explores ideas about the nature of the experimental method and concepts such as underdetermination, the nature of scientific explanation, theory confirmation, realism, the role of social values in science, sociological approaches to understanding science, and the nature of scientific change.
Textbooks
Alan F. Chalmers. What Is This Thing Called Science? 3rd edition.
Course reader

HPSC 2900 **The Birth of Modern Science (Advanced)**

6 credit points. B A, B E, B Sc, B Sc (Marine Science), UG Study Abroad Program. Dr Ofer Gal. **Session:** Semester 1. **Classes:** (3 lee, 1 tut)/wk. **Prerequisites:** Enrolment in the Talented Student Program or 24 credit points of Junior study with a Distinction average. **Prohibitions:** HPSC (2002 or 2100). **Assessment:** Short essays, tutorial work, tests.
NB: Enrolment in this unit is limited, and will be on a first-come, first-served basis.
The topics covered in The Birth of Modern Science' will be covered in more depth, in a special tutorial set aside for advanced students.
Textbooks
Henry, J. The Scientific Revolution and the Origins of Modern Science.
Course reader

HPSC 2901 **What Is This Thing Called Science? (Adv)**

6 credit points. B A, B E, B Sc, B Sc (Marine Science), UG Study Abroad Program. Dr Rachel Ankeny and HPS staff. **Session:** Semester 2. **Classes:** (3 lee, 1 tut)/wk. **Prerequisites:** Enrolment in the Talented Student Program or 24 credit points of Junior study with a Distinction average. **Prohibitions:** HPSC (2002 or 2100). **Assessment:** Short essays, tutorial work, tests.
NB: Enrolment in this unit is limited and will be on a first-come, first-served basis.
The topics covered in 'What is This Thing Called Science?' will be covered in more depth, in a special tutorial set aside for advanced students.
Textbooks
Alan F. Chalmers. What Is This Thing Called Science? 3rd edition.
Course reader

History and Philosophy of Science Senior units of study

Students wishing to major in History and Philosophy of Science in either the BSc, BA or BLibSt must take 24 credit points from the following Senior units of study. Our Intermediate courses provide students with a background in the history and philosophy of science. HPSC 3022 Science and Society, provides students with an essential background in the sociology of science. This unit of study is compulsory for majors in history and philosophy of science.

HPSC 3002 **History of Biological/Medical Sciences**

6 credit points. B A, B Sc, UG Study Abroad Program. Dr Hans Pols or HPS staff. **Session:** Semester 1. **Classes:** (2 lee, 2 tut)/wk. **Assumed Knowledge:** HPSC (2001 and 2002) or HPSC (2100 and 2101). **Prerequisites:** At least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units. **Assessment:** Short essays, presentation, tutorial work, final essay.
Throughout the ages people have been born, have died, and in between have lived in various stages of sickness or health. In this course we shall look at how these states of being were perceived in different times and places throughout history, while at the same time noting the increasing medicalisation of everyday life, together with the irony that the "miracles" of modern medicine appear to have created a generation of the "worried well". Using this historical perspective, we shall ask how perceptions of sickness, health and the related provision of health care have been intertwined with social, political and economic factors and, indeed still are today.
Textbooks
Course reader

HPSC 3016 **Mathematical Sciences: HPS**

6 credit points. B A, B Sc. Dr Ofer Gal. **Session:** Semester 2. **Classes:** 2 lee & 2 tut/wk. Individual student consultation as required. **Assumed Knowledge:** HPSC (2100 and 2101) or HPSC (2001 and 2002). **Prerequisites:** At least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units. **Prohibitions:** HPSC (3001 or 3106). **Assessment:** Take-home tests, short essays, tutorial participation.
Modern Western science has a number of characteristics which distinguish it from other scientific cultures. It ascribes its tremendous success to sophisticated experiments and meticulous observation. It understands the universe in terms of tiny particles in motion and the forces between them. It is characterised by high- powered mathematical theorizing and the rejection of any intention, value or purpose in Nature. Many of these characteristics were shaped in the 17th century, during the so called scientific revolution. We will consider them from an integrated historical- philosophical perspective, paying special attention to the intellectual motivations of the canonical figures of this revolution and the cultural context in which they operated. Topics will include: experimentation and instrumentation, clocks, mechanistic philosophy, and the changing role of mathematics.
Textbooks
Course reader

HPSC 3022 **Science and Society**

6 credit points. B A, B Sc. Dr Hans Pols or HPS staff. **Session:** Semester 1. **Classes:** (2 lee, 2 tut)/wk. **Assumed Knowledge:** HPSC (2100 and 2101) or HPSC (2001 and 2002). **Prerequisites:** At least 8 credit points of Intermediate HPSC units or Credit or better in at least 4 credit points of Intermediate HPSC units, and at least 24 credit points of Intermediate or Senior units. **Prohibitions:** HPSC3003. **Assessment:** Short essays, tutorial work, presentation.
NB: This unit is a requirement for HPS majors.
Science has become an essential element of Western societies. It is impossible to imagine
our lives today without the achievements of science, technology, and medicine. Many scientists and laypeople think that scientific knowledge transcends political, social, cultural, and economic conditions. Sociologists of science think otherwise. In this unit, we will investigate the nature of science, the position of science in society, and the internal dynamics of science.
Sociologists of science have compared scientific knowledge to a ship in a bottle: if you see the finished product, you can't understand how it came about, and you can't believe that it is not what it claims to be: the empirically-determined truth about the world. In this unit, we will have a close look at some of these ships in bottles and examine how they got there. When observing science-in-the- making,

rather than the finished product, the factors that influence science become much clearer. We will introduce some the most exciting and innovative ideas about what science is and how it works by examining the sociological and anthropological approaches to science that have become the basis for research in the social studies of science, technology, and medicine, including: the norms of science, scientists' images of themselves, the boundaries between science and other subjects, the rhetoric of scientific writing, laboratory work, science museums and science in the media.
Textbooks
Course reader

HPSC 3023 **Psychology** & **Psychiatry: History & Phil**

6 credit points. B A, B Sc, Grad Dip Psych, UG Study Abroad Program. Dr Hans Pols. **Session:** Semester 1. **Classes:** 2 lee, 2 tut/wk. **Assumed Knowledge:** Basic knowledge about the history of modern science as taught in HPSC2100 AND the principles of philosophy of science as taught in HPSC2101 AND knowledge of the various sub-disciplines within Psychology. **Prerequisites:** (at least 8 credit points of intermediate HPSC Units of study) OR (a CR or above in one HPSC intermediate Unit of Study) OR (12 intermediate credit points in psychology). **Prohibitions:** PSYC3202. **Assessment:** Take-home essays (4000 words), take-home exams, tutorial work.
This course examines one of the most interesting developments in the history of science: it deals with the sciences that make human beings their object of study. We will examine the ways in which psychologists and psychiatrists have investigated human nature, what kinds of experimental approaches they have developed to that end, the major controversies in this field, and the basic philosophical assumptions that have been made in the sciences of human nature. We investigate the developments of psychological theories and investigative methods as well as the development of psychiatric theory, treatment methods, and institutions.
Textbooks
Course reader

HPSC 3024 **Science and Ethics**

6 credit points. B A, B S T, B Sc, UG Study Abroad Program. Dr Michael Selgelid. **Session:** Semester 2. **Classes:** 2 lee, 2 tut/wk. **Prerequisites:** At least 24 credit points of Intermediate or Senior units of study. **Prohibitions:** HPSC3007. **Assessment:** Short essays, tutorial work, tests.
Is science really neutral, impartial, and objective? Should it be? Or should it tell us what is right, good, fair, or just? Does scientific progress imply social progress and benefits for humanity? Are scientists responsible when their discoveries are used for evil purposes? Should the publication of dangerous discoveries be prevented? What if the same discoveries might be used for beneficial purposes as well?
In this unit, we give study possible answers to these questions by examining the relationships between science and human values. We consider the extent to which science is, or should be, influenced by the values of scientists and the societies in which they operate. And we question the extent to which science promotes or threatens the good of humankind. Issues such as these are pursued via philosophical examination of major historical episodes involving weapons of mass destruction, Nazi medicine, cloning, mind control in neuroscience, human experimentation and censorship. We also examine contemporary developments in genetics and brain science.
This unit is for science and non-science students alike. It will be of interest to anyone concerned about the social responsibilities of scientists, matters of science policy, and relationships between science and society.
Textbooks
Course reader

History and Philosophy of Science Honours

An Honours course in HPS is available to students of sufficient merit who have satisfied the requirements for the degree of BSc or BA or BLibSt with a major in HPS or another relevant area and to students who have satisfied the requirements for the degree of BMedSc including the HPS options in the second and third years of study.
The Honours course consists of 48 points of Honours level units of study, which must include HPSC 4201 HPS Research Project 1, HPSC 4202 HPS Research Project 2, HPSC 4203 HPS Research Project 3 and HPSC 4204 HPS Research Project 4. In their final semester all students must also enrol in the zero credit point non-assessable unit HPSC 4999.
Students intending to proceed to Honours or to enrol in the Graduate Diploma in Science (HPS) are strongly advised to contact the Unit towards the end of the previous academic year to discuss thesis topic and supervision.
Note: Honours level (4000) Units of Study are available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. A number of our Honours-level courses are also open to students in the medical humanities and liberal studies.

HPSC 4101 **Philosophy of Science**

6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons), Grad Cert Sc (H P S), UG Study Abroad Program. Dr Ofer Gal. **Session:** Semester 2. **Classes:** One 2hr sem/wk, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Five short written assignments, seminar participation.
NB: Department permission required for enrolment. NB: Department permission required for enrolment
The success of science in enabling us to manipulate the natural world has been so surprising, so often, that it's caused every society to revise a large part of its pre-scientific philosophical and religious consensus. Something very important is going on, and a number of fascinating philosophical topics emerge when we try to analyse what it is. Working backwards from the success of an epistemological enterprise offers a fruitful way to do philosophy, and, reciprocally, our philosophical insights help to clarify the contentious question of what it means to claim that science is successful.
This unit investigates the relationships between scientific theories and evidence, and the relationships between scientific theories and other scientific theories. Participants will have an opportunity to relate the successes and failures of specific sciences to contemporary philosophical debates. Each week the seminar will discuss a piece of philosophical theory in the light of examples from particular sciences. Technical topics will be covered, but very little background knowledge will be assumed.
Textbooks
Blackburn S., The Oxford Dictionary of Philosophy, and course reader.

HPSC 4102 **History of Science**

6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons), Grad Cert Lib Stud, Grad Cert Medical Hum, Grad Cert Sc (H P S), Grad Dip Lib Stud, M Lib Stud, PG Coursework Exchange, UG Study Abroad Program. HPS Staff. **Session:** Semester 1, Semester 2. **Classes:** One 2hr sem/wk. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Essays, seminar participation.
NB: Department permission required for enrolment. NB: Department permission required for enrolment
This unit explores major episodes in the history of science as well as introducing students to historiographic methods. Special attention is paid to developing practical skills in the history and philosophy of science.
Textbooks
Course reader

HPSC 4103 **Sociology** of **Science**

6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons), Grad Cert Lib Stud, Grad Cert Sc (H P S), Grad Dip Lib Stud, M Lib Stud, UG Study Abroad Program. Dr Hans Pols. **Session:** Semester 1. **Classes:** One 2hr sem/wk, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Essays, fieldwork report, seminar participation mark.
NB: Department permission required for enrolment. NB: Department permission required for enrolment.
This unit explores recent approaches in the social studies of scientific knowledge. Students evaluate various sociological approaches by conducting their own research on topics relevant to their own major thesis.
The unit starts with an overview of the development of history and philosophy of science since 1945, to put the emergence of the sociology of science into perspective, before moving on to a selection of readings from the field. Topics will include: the strong program critique of traditional philosophy of science, the sociology of technology, the impact of feminism on the study of science, and the actor-network approach developed by Bruno Latour and Michel Callon.
Textbooks
Course reader

HPSC 4104 **Recent Topics in HPS**

6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons), Grad Cert Sc (H P S), PG Coursework Exchange, UG Study Abroad Program. HPS Staff. **Session:** Semester 1, Semester 2. **Classes:** One 2hr sem/wk, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Essays, seminar participation.
NB: Department permission required for enrolment. NB: Department permission required for enrolment.
An examination of one area of the contemporary literature in the history and philosophy of science. Special attention will be paid to

development of research skills in the history and philosophy of science.
Textbooks
Course reader

HPSC 4105 **HPS Research Methods**
6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons), Grad Cert Sc (H P S). Dr Rachel Ankeny. **Session:** Semester 2, Semester 1. **Classes:** One 2hr sem/wk, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Literature review, archival research project, seminar participation mark, short essays.
NB: Department permission required for enrolment. NB: Department permission required for enrolment.
Adopting a seminar style, this unit provides students with an advanced knowledge of the skills necessarily to conduct their own original research in the sociology, history and philosophy of science. Participants will be given a weekly set of core readings, and specialists both from within the Unit and from outside will present their views on the topic in question. This presentation will form the basis for a discussion involving the students, the academic members of the Unit, and invited speakers.
Topics will include: the use of case studies in the philosophy of science, how to conduct oral history projects, institutional history, and sociology of science.
Textbooks
Course reader

HPSC 4108 **Core topics: History & Philosophy of Sci**
6 credit points. B A, B Med Sc (Hons), B Sc (Hons), Grad Cert Sc (H P S), PG Coursework Exchange, PG Summer/Winter School. HPS staff. **Session:** Semester 1, Semester 2. **Classes:** 1 sem/wk. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Prohibitions:** Not available to students who have completed a major in History and Philosophy of Science or an equivalent program of study at another institution.. **Assessment:** Essays, seminar presentations, seminar participation mark.
NB: Department permission required for enrolment.
An intensive reading course, supported by discussion seminars, in the main figures and events of the 'Scientific Revolution' of the 16th to 18th centuries, in the leading historiographic interpretations of the scientific revolution and in the use of episodes in the scientific revolution as evidence for the philosophies of science of Karl Popper, Imre Lakatos, Thomas Kuhn and contemporary authors.
Textbooks
Course reader

HPSC 4201 **HPS Research Project 1**
6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons), Grad Cert Sc (H P S). HPS Staff. **Session:** Semester 1, Semester 2. **Classes:** Weekly individual supervision, fortnightly 90-minute research seminars. **Assumed Knowledge:** HPSC (2001 and 2002) or HPSC (2100 and 2101). **Prerequisites:** Available only to students admitted to HPS Honours and Graduate Diploma or Certificate in Science (History and Philosophy of Science). **Prohibitions:** HPSC4106, HPSC4107. **Assessment:** HPSC4201, HPSC4202, HPSC4203 and HPSC4204 are jointly assessed by a research thesis of up to 15,000 words.
NB: Department permission required for enrolment. Departmental permission required for enrolment
Research into a topic in history, philosophy or sociology of science under the supervision of one or more members of the HPS staff.

HPSC 4202 **HPS Research Project 2**
6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons). HPS Staff. **Session:** Semester 1, Semester 2. **Classes:** Weekly individual supervision, fortnightly 90-minute research seminars. **Assumed Knowledge:** HPSC (2001 and 2002) or HPSC (2100 and 2101). **Prerequisites:** Available only to students admitted to HPS Honours and Graduate Diploma or Certificate in Science (History and Philosophy of Science). **Prohibitions:** HPSC4106 and HPSC4107. **Assessment:** HPSC4201, HPSC4202, HPSC4203 and HPSC4204 are jointly assessed by a research thesis of up to 15,000 words.
NB: Department permission required for enrolment. Departmental permission required for enrolment
Research into a topic in history, philosophy or sociology of science under the supervision of one or more members of the HPS staff.

HPSC 4203 **HPS Research Project 3**
6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons). HPS Staff. **Session:** Semester 1, Semester 2. **Classes:** Weekly individual supervision, fortnightly 90-minute research seminars. **Assumed Knowledge:** HPSC (2001 and 2002) or HPSC (2100 and 2101). **Prerequisites:** Available only to students admitted to HPS Honours and Graduate Diploma or Certificate in Science (History and Philosophy of Science). **Prohibitions:** HPSC4106, HPSC4107. **Assessment:** HPSC4201, HPSC4202, HPSC4203 and HPSC4204 are jointly assessed by a research thesis of up to 15,000 words.
NB: Department permission required for enrolment. Departmental permission required for enrolment
Research into a topic in history, philosophy or sociology of science under the supervision of one or more members of the HPS staff.

HPSC 4204 **HPS Research Project 4**
6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons). HPS Staff. **Session:** Semester 1, Semester 2. **Classes:** Weekly individual supervision, fortnightly 90-minute research seminars. **Assumed Knowledge:** HPSC (2001 and 2002) or HPSC (2100 and 2101). **Prerequisites:** Available only to students admitted to HPS Honours and Graduate Diploma or Certificate in Science (History and Philosophy of Science). **Prohibitions:** HPSC4106, HPSC4107. **Assessment:** HPSC4201, HPSC4202, HPSC4203 and HPSC4204 are jointly assessed by a research thesis of up to 15,000 words.
NB: Department permission required for enrolment. Departmental permission required for enrolment
Research into a topic in history, philosophy or sociology of science under the supervision of one or more members of the HPS staff.

HPSC 4999 **History & Philosophy of Science Honours**
0 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons). **Session:** Semester 1, Semester 2. **Prerequisites:** Available only to students admitted to HPS Honours.
NB: Department permission required for enrolment.
All students in History and Philosophy of Science Honours must enrol in this non-assessable unit of study in their final semester.

Immunobiology Major
A/Prof Helen Briscoe
Immunology in the Discipline of Infectious Diseases and Immunology administers the Immunobiology Major. Our location is on Level 6, Blackburn Building D06. Further information from Helen Briscoe (phone: (02) 9351 7308, email: hbriscoe@med.usyd.edu.au).
A major in Immunobiology requires successful completion of 12 credit points of Senior study in Immunology plus 12 credit points from the elective Senior units of study in Biochemistry, Biology, Cell Pathology, Molecular Biology and Genetics, Microbiology, Physiology or Virology listed in Table I. Participants in the Immunobiology major will select an accompanying Senior unit according to their particular interest. Concurrent study in the life science disciplines will add a depth of understanding in a particular aspect of immunology. Participants are invited to consult with Helen Briscoe and with elective unit of study co-ordinators before selecting concurrent study units and should note that a unit of study taken as part of the Immunobiology Major cannot count towards a major in another Science discipline area.

Immunology
Immunology is offered as Introductory Immunology (IMMU 2101) at Intermediate level, Molecular and Cellular Immunology (IMMU 3102) and Immunology in Human Disease (IMMU 3202) at Senior level, and Immunology Honours. Further information can be obtained from Helen Briscoe (phone: (02) 9351 7308, email: hbriscoe@med.usyd.edu.au).

IMMU 2101 **Introductory Immunology**
6 credit points. B Sc, B Sc (Molecular Biology & Genetics), UG Study Abroad Program. A/Prof Helen Briscoe. **Session:** Semester 1. **Classes:** 2x lhr lectures/week, 3 hr tutorial or practical or independent study/week. **Assumed Knowledge:** Junior Biology and Junior Chemistry. **Prerequisites:** 24 credit points of Junior units of study from any of the Science discipline areas. **Prohibitions:** IMMU 2001, BMED2506, BMED2807. **Assessment:** One 2 hr examination (60%), one 2000 word essay (20%), on-line quizzes and tutorial group presentation (20%).
NB: This is a prerequisite unit of study for IMMU3102 and IMMU3202. The completion of 6 credit points ofMBLG units of study is highly recommended.
This unit of study will provide an overview of the human immune system and essential features of immune responses. The lecture course begins with a study of immunology as a basic research science. This includes the nature of the cells and molecules that recognise antigens and how these cells respond at the cellular and molecular levels. Practical / tutorial sessions will illustrate particular concepts introduced in the lecture program. Further lectures and self-directed learning sessions will integrate this fundamental information into studies of mechanisms of host defence against infection, transplantation, and dysfunction of the immune system including allergy, immunodeficiency and autoimmune diseases.
Textbooks
Basic Immunology Functions and Disorders of the Immune System.
AK Abbas & AH Lichtman. Saunders 2004

IMMU 3102 **Molecular and Cellular Immunology**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Allison Abendroth. **Session:** Semester 2. **Classes:** 3 lee, 1 tut, 1 prac/fortnight. **Assumed Knowledge:** Intermediate biochemistry and molecular biology and genetics. **Prerequisites:** IMMU 2101 or IMMU2001 or BMED 2807 or BMED2506 and 6CP of Intermediate units of study from Biochemistry, or Biology or Microbiology or Molecular Biology and Genetics or Pharmacology or Physiology. **Prohibitions:** IMMU 3002, BMED 3003. **Assessment:** Progressive assessment: 40% includes practical assessment (lab quizzes/practical assignment), 2000w essay, tutorial presentation,
Formal examination: 60% one 2hr exam.
NB: The completion of 6 CP ofMBLG units of study is highly recommended. Concurrent study of IMMU 3202 Immunology in Human Disease is strongly recommended.
This study unit builds on the series of lectures that outlined the general properties of the immune system, effector lymphocytes and their functions, delivered in the core courses, IMMU 2101 - Introductory Immunology and BMED 2807 -Microbes & Body Defences

(formerly IMMU 2001 and BMED 2506). In this unit the molecular and cellular aspects of the immune system are investigated in detail. We emphasise fundamental concepts to provide a scientific basis for studies of the coordinated and regulated immune responses that lead to elimination of infectious organisms. Guest lectures from research scientists, eminent in particular branches of immunological research are a special feature of the course. These provide challenging information from the forefront of research that will enable the student to become aware of the many components that come under the broad heading 'Immunology'. Three lectures (1 hour each) will be given each fortnight: 2 lectures in one week and one lecture the following week, for the duration of the course. This unit directly complements the unit "Immunology in human disease IMMU 3202" and students are strongly advised to undertake these study units concurrently.
Textbooks
Cellular and Molecular Immunology 5th edition 2003. AK Abbas & AH Lichtman, WB Saunders Company and / or Immunobiology -the immune system in health and disease 6th edition CA Janeway, P Travers, M Walport and M Shlomchik, Garland Press.

IMMU 3202 **Immunology in Human Disease**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Allison Abendroth. **Session:** Semester 2. **Classes:** 3 lee, 1 tut, 1 prac/fortnight. **Assumed Knowledge:** Intermediate biochemistry and molecular biology and genetics. **Prerequisites:** IMMU 2101 or IMMU2001 or BMED2807 or BMED2506 and 6CP of Intermediate units of study from Biochemistry, or Biology or Microbiology or Molecular Biology and Genetics or Pharmacology or Physiology. **Prohibitions:** IMMU 3002, BMED3003. **Assessment:** Progressive assessment: 40% includes practical assignment, portfolio of case studies, poster
presentation, tutorial presentation.
Formal examination: 60% one 2hr exam.
NB: The completion of6CP ofMBLG units of study is highly recommended. Concurrent study ofIMMU3102 Molecular and Cellular Immunology is very strongly recommended.
This study unit builds on the series of lectures that outlined the general properties of the immune system,
effector lymphocytes and their functions, delivered in the core courses, IMMU 2101 - Introductory
Immunology and BMED 2807 - Microbes & Body Defences (formerly IMMU 2001 and BMED 2506). We
emphasise fundamental concepts to provide a scientific basis for studies in clinical immunology;
dysfunctions of the immune system eg. autoimmune disease, immunodeficiencies, and allergy, and immunity
in terms of host - pathogen interactions. This unit has a strong focus on significant clinical problems in
immunology and the scientific background to these problems. The unit includes lectures from research
scientists and clinicians covering areas such as allergy, immunodeficiency, autoimmune disease and
transplantation. This course provides challenging information from the forefront of clinical immunology and
helps the student develop an understanding of immune responses in human health and disease. Three lectures
(1 hour each) will be given each fortnight: 2 lectures in one week and one lecture the following week, for the
duration of the course. This unit directly complements the unit "Molecular and Cellular Immunology" and
students are very strongly advised to undertake these study units concurrently.
Textbooks
Cellular and Molecular Immunology 5th edition 2003. AK Abbas & AH Lichtman, WB Saunders Company and / or Immunobiology -the immune system in health and disease 6th edition CA Janeway, P Travers, M Walport and M Shlomchik, Garland Press.
Case studies in immunology-a clinical companion 4th edition Rosen and Geha.

Immunology Honours
The Honours program in Immunology provides the opportunity for full-time research on a project proposed and supervised by a staff member expert in that field. Experimental research, a literature review in essay format of the research topic, a thesis, and a seminar on the project constitutes the major part of the Honours program. Guidance in research techniques is given in training programs covering experimental design, data analysis, written and oral communication and critical appraisal of the literature. In addition, a supplementary seminar program keeps students informed and abreast of wider issues in immunology.
Students are invited to apply for Honours enrolment during semester two of the year preceding Honours. Students should consult the Honours coordinator in the first instance. A list of possible research topics is provided, and students select projects of interest, speak with prospective supervisors and apply for permission to enrol, before the end of semester two. Within the constraints of availability, an attempt is made to assign students to projects of their choice.
Usually Honours candidates will have achieved at least a credit in Senior Immunology units of study and will also have successfully undertaken Senior study in Biochemistry, Biology, Cell Pathology, Microbiology, Physiology or Virology. BSc candidates will have gained a major in Immunobiology, or a related discipline such as Biochemistry, Biology, Cell Pathology or Physiology. Usually Honours candidates will have an overall SciWAM of 65 or greater.

Information Technologies
The School of Information Technologies administers the disciplines of Information Systems and Computer Science, each of which is available as a major in the Bachelor of Science degree.
Computer Science
Computer Science is the scientific discipline which has grown out of the use of digital computers to manage and transform information. Computer Science is concerned with the design of computers, their applications in science, government and business, and the formal and theoretical properties which can be shown to characterise these applications. Teaching in Computer Science covers a diversity of topics such as Software Development, Networks and Systems, Multimedia Technologies and Principles of Computer Science. The diversity of the discipline is demonstrated by current research interests in the School which include biomedical image processing, parallel and distributed computing, user-adaptive systems and information visualisation. The School has a range of computers and specialised laboratories for its teaching and research.
Note that units of study beginning with COMP, MULT, NETS, SOFT and INFO (but not IS YS) can be counted as Computer Science. Each INFO unit may only be counted to one subject area (either Computer Science or Information Systems, but not both). Students who intend to major in Computer Science should pay particular attention to the prerequisites of each unit of study.
Students should note that entry to Honours requires an average of Credit or better in the Senior units of study.
Information Systems
Information Systems studies people and organisations to determine and deliver their technological needs. Hence Information Systems encompasses issues such as strategic planning, system development, system implementation, operational management, end-user needs and education. Information Systems study is related to Computer Science but there is an important distinction in that Information Systems is about the architecture of computer systems and making them work for people, hence people are the focus of attention, whereas much of Computer Science is about developing and improving the performance of computers. The School performs IS research in a number of areas including natural language processing, data mining, knowledge management and workflow methods. Students who wish to complete a major in Information Systems need to appreciate that effective communication and critical analysis are important parts of the curriculum and though taught explicitly in one unit ARIN 1000 (or an equivalent unit) are expected to be practised throughout all units of study. Intending Honours students need to complete at least 18 credit points of Information systems units at Senior level. Note that units beginning with both ISYS and INFO codes (but not COMP, MULT, NETS or SOFT) can be counted as Information systems units.
Other information
The units of study offered by the School are described briefly below, and more fully in the School's Handbook which is available from the School Office (Room G71) in the Madsen Building. Students should confirm details of units of study, registration procedures, textbooks, etc., on the School noticeboards and web site www.it.usyd.edu.au. Those in doubt should seek advice from members of the School's academic staff.
Summer School: January-February.
This School offers some units of study in The Sydney Summer School. Consult The Sydney Summer School web site for more information: www.summer.usyd.edu.au/

Computer Science and Information Systems Junior units of study
See the School web site www.it.usyd.edu.au for advice on choosing appropriate units of study from this list.

SOFT 1001 **Software Development 1**
6 credit points. B A, B Com, B Des Comp, B E, B Med Sc, B S T, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 1, Semester 2. **Classes:** One lhr lecture, one 2 hr tutorial, one 3hr practical. **Assumed Knowledge:** HSC Mathematics Extension 1. **Prohibitions:** SOFT 1901,

COMP (1001 or 1901), DECO2011. **Assessment:** Written and practical assignments, quizzes, exam.
Computers are highly versatile: the same machine can be used to manage the payroll for an enterprise, or play multi-user games, or predict changing weather activity. The reason is that people can write software that causes the machine to behave in very different ways. This unit is the first in a long sequence that build students' skills in software development. For many students these skills are the key to their employment as IT professionals. The unit introduces object-oriented software development with design-by-contract, which is the state-of-the-art in industry. Java is the programming language used. Students work in small groups, so they experience many of the issues of team interaction that are important in practice. Also, students take responsibility to plan their own learning to meet required objectives, so they will develop skills to learn from resources including reference materials and examples, just as happens in the profession.

SOFT 1901 **Software Development 1 (Adv)**

6 credit points. B A, B Com, B Des Comp, B E, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 1, Semester 2. **Classes:** 1 lee, 2 tut & 3 lab/wk. **Assumed Knowledge:** HSC Mathematics Extension 1. **Prohibitions:** May not be counted with SOFT 1001 or COMP (1001 or 1901). **Assessment:** Written and practical assignments, quizzes, exam.
NB: Department permission required for enrolment. Entry requires departmental permission, except for students in BSc(Adv), BCST(Adv) or BIT degrees
An advanced alternative to SOFT 1001; covers material at an advanced and challenging level. See the description of SOFT 1001 for more information.

SOFT 1002 **Software Development 2**

6 credit points. B A, B Com, B Des Comp, B E, B Med Sc, B S T, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 1, Semester 2, Summer. **Classes:** One 1hr lecture, one 2hr tutorial, one 3 hr practical. **Prerequisites:** SOFT (1001 or 1901) or COMP (1001 or 1901) or DECO2011. **Prohibitions:** SOFT 1902 or COMP (1002 or 1902). **Assessment:** Written and practical assignments, quizzes, exam.
NB: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.
This unit extends the students' software development skills in several important directions. It covers a number of advanced features of Java programming such as inheritance and recursion. It deals with important issues in using library classes to manage collections of similar objects. It also provides students with experience in design; that is, in choosing which classes to write to respond to a user's demands. Design in group work raises special issues of dealing with conflict and misunderstanding between group members.

SOFT 1902 **Software Development 2 (Adv)**

6 credit points. B A, B Com, B Des Comp, B E, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 1, Semester 2. **Classes:** 1 lee, 2 tut & 3 lab/wk. **Prerequisites:** SOFT (1001 or 1901) or COMP (1001 or 1901) and Distinction in one of these. **Prohibitions:** May not be counted with SOFT 1002 or COMP (1002 or 1902) or DECO2011. **Assessment:** Written and practical assignments, quizzes, exam.
NB: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.
An advanced alternative to SOFT 1002; covers material at an advanced and challenging level. See the description of SOFT 1002 for more information.

INFO 1003 **Foundations of Information Technology**

6 credit points. B A, B Com, B E, B S T, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Nutrition). Darren Louie. **Session:** Semester 1, Semester 2. **Classes:** (2 lee, 1 tut, 3 prac)/wk. **Assumed Knowledge:** Basic computer operations. **Prohibitions:** INFO1000, INFS1000, ISYS1003, INFO1903.. **Assessment:** Assignments, written exam, prac exam.
In our society computer systems have become a major platform for communication, commerce, education and entertainment. Students, using a systems thinking approach, will undertake meaningful research and authoring tasks using various kinds of software including word processors, spreadsheets, web browsers and databases, in order to understand how hardware, software and human systems support communication, collaboration, modelling and decision-making. Students will be expected to understand how information is structured, linked and flowed in different situations, and to be able to customise an IT environment to streamline or share tasks. In addition, the course will emphasise the importance of documenting decisions and processes, and understanding the many social, ethical, and intellectual propery issues that arise when creating and handling information.

INFO 1903 **Foundations of Information Tech (Adv)**

6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition). **Session:** Semester 1. **Classes:** 3 lee, 2x1 hrs lab/wk. **Assumed Knowledge:** Basic computer operations. **Prerequisites:** UAI at least that for acceptance into BSc(Adv) degree program. **Prohibitions:** INFO1003, ISYS1003, INFO1000, INFS1000.. **Assessment:** Practical assignments, quizzes, tutorial contribution, written examination.
NB: Department permission required for enrolment.
Analysing empirical information is the cornerstone of many domains, including science, engineering, economics and social science. Graduates in these domains must be able to process, manipulate and present the growing quantities of data effectively. Although computing should play a key role, we rarely exploit the full power of existing or custom software to efficiently convert data into information and then knowledge. INFO 1903 will equip students with the skills and techniques for exploiting data effectively.
INFO 1903 covers advanced data processing and management, integrating the use of existing productivity software, e.g. spreadsheets and databases, with the development of custom software using the powerful general-purpose Python scripting language. It will focus on skills directly applicable to research in any quantitative domain. The course will also cover presentation of data through written publications and dynamically generated web pages, visual representations and oral presentation skills.The assessment, a semester long project, involves the demonstration of these skills and techniques for processing and presenting data in a choice of domains.
Textbooks
Given the diversity of the material, the main resource for INFO 1903 will be the course notes, which will be made available through the University Copy Centre.
Additional suggested readings:
M. Lutz and D. Ascher. Learning Python, 2nd Ed., O'Reilly, 2003. ISBN 0-596-00281-5

Computer Science and Information Systems Intermediate units of study

It is important to choose second year subjects appropriately to keep options open for further study. See www.it.usyd.edu.au for advice.

COMP 2160 **Data Structures**

6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 hrs lecture per week, 2 hrs tut (structured as 2 hr block) per week. **Prerequisites:** SOFT (1002 or 1902) or COMP (1002 or 1902). **Prohibitions:** COMP(2111 or 2811 or 2002 or 2902 or 2860). **Assessment:** Assignments, 2 hour exam.
One of the worst things that can happen when implementing a large software system is to find, after months of hard work, that the underlying design is too inefficient, or is fundamentally flawed. Such situations can often be avoided through careful design using well understood structures, and an analysis of the time complexity and correctness of these designs.
This unit includes a formal introduction to commonly used data structures such as lists, stacks, queues, priority queues, search trees, hash tables and graphs. It also covers the analysis of algorithms and all data structured introduced are analysed according to a notion of asymptotic complexity. There will be a programming project in which students will design an algorithmic solution to a problem, analyse its time complexity, and implement it.
Textbooks
TBA

COMP 2860 **Data Structures (Advanced)**

6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 hrs lecture per week, 1 hr tut per week. **Prerequisites:** [SOFT (1002 or 1902) or COMP (1002 or 1902)] and Distinction in one COMP, SOFT or MATH unit. **Prohibitions:** COMP(2111 or 281 lor 2002 or 2902 or 2160). **Assessment:** Assignments, one 2 hour exam.
An advanced alternative to COMP2160; covers material at an advanced and challenging level. See the description of COMP2160 for more information.
Textbooks
TBA

INFO 2110 **Systems Analysis and Modelling**

6 credit points. B A, B Com, B Des Comp, B E, B Sc, B Sc (Bioinformatics), UG Study Abroad Program, UG Summer/Winter School. Mr Simon Poon and Dr Geoffrey Kennedy. **Session:** Summer, Semester 1. **Classes:** 2 hrs lee, 1 hr tut & 1 hr prac/wk. **Assumed Knowledge:** Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO1000 level. **Prerequisites:** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DECO2011. **Prohibitions:** INFO (2000 or 2810 or 2900). **Assessment:** Written and practical assignments, exam.
This unit provides a comprehensive introduction to the analysis of complex systems, and the representation of models of the system in widely-understood notations. It addresses the roles a systems analyst plays in different stages in the systems lifecycle. It covers a collection of methodologies, models, tools, and techniques that can be used to model systems. The major topics are requirements elicitation and representation, data models, process models, and project planning.

We will cover both the traditional structured approach which includes process modelling using data flow diagrams (DFDs) and conceptual data modelling using Entity-Relationship Diagram (ERDs), and the object-oriented approach using class diagrams, sequence diagrams, collaboration diagrams, and statechart diagrams, expressed in UML. Tools such as Microsoft Access will be used to produce simple system prototypes, based on models.

INFO 2810 **Systems Analysis and Modelling (Adv)**

6 credit points. B A, B Com, B Des Comp, B E, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. Mr Simon Poon and Dr Geoffrey Kennedy. **Session:** Semester 1. **Classes:** 3 lee, ltut and/or lprac/wk. **Assumed Knowledge:** Simple data modelling and simple SQL knowledge covered at ISYS1003 level. **Prerequisites:** (INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 credit points of COSC units of study) or DECO2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. **Prohibitions:** INFO (2000 or 2110 or 2900). **Assessment:** Exam, assignments, tutorial papers.

An advanced alternative to INF02110; covers material at an advanced and challenging level. See the description of INF02110 for more information.

INFO 2120 **Database Systems 1**

6 credit points. B A, B Com, B Des Comp, B E, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. Dr Uwe Roehm, A/Prof Joseph Davis. **Session:** Semester 2. **Classes: 2** hrs lee, 2hr tut **/wk. Prerequisites:** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or (6 creditpoints of COSC) or DECO2011. **Prohibitions:** INFO (2005 or 2820 or 2905).. **Assessment:** written and practical assignments plus a written exam.

This unit of study will provide a comprehensive introduction to database management, SQL query language, and application development using databases. The fundamentals of relational database technology will be covered.

Contents: data modelling, relational data model, data normalisation, logical and physical database design, SQL query language, Form-based application development, client server and web-enabled transactions processing systems, and distributed database systems.

INFO 2820 **Database Systems 1 (Advanced)**

6 credit points. B A, B Com, B Des Comp, B E, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. Dr Uwe Roehm, A/Prof Joseph Davis. **Session:** Semester 2. **Classes:** 2xlhr lectures, lhr seminar, lhr lab. **Assumed Knowledge:** Basics of data modelling, experience working with information technology tools. **Prerequisites:** INFO(1003 or 1903 or 1000) or ISYS1003 or INFS1000 or SOFT(1001 or 1901) or COMP(1001 or 1901) or 6 credit points of COSC units of study or DEC2011; and Distinction in one ISYS, INFO, SOFT or INFS unit. **Prohibitions:** INFO (2005 or 2120 or 2905). **Assessment:** Exam, written and/or practical assignments.

An advanced alternative to INFO2120; covers material at an advanced and challenging level. See the description of INFO2120 for more information.

ISYS 2140 **Information Systems**

6 credit points. B A, B A Informatics, B E, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. A/Prof Joseph Davis. **Session:** Semester 1. **Classes:** 2 hours of lecture and 2 hours of tutorial per week. **Assumed Knowledge:** Understanding of the roles and functions of information technology tools for document processing, modelling, database management etc.

Experience in the use of these tools to solve practical problems and to present the results effectively.

Awareness of the main concepts of programming and of a program running in a computer (a process). **Prerequisites:** INFOQ003 or 1903 or 1000) or ISYS 1003 or INFS 1000. **Prohibitions:** ISYS (2006 or 2007). **Assessment:** One 2 hours exam, written assignments and Tutorial presentations.

This unit of study will provide a comprehensive conceptual and practical introduction to information systems (IS) in contemporary organisations.

Content: General Systems Theory; Basic concepts of organisations, systems and information; The role of information systems in operating and managing organisations; How IS and the Internet enables organisations to adopt more competitive business models, including e-Commerce; The technologies that underpin IS; Distributed systems, including security, networking principles, the client server model and how distributed components locate and communicate with each other; The integration of disparate systems both within the organisation and between organisations, including the role of XML; Behavioural, managerial and ethical issues in implementing and managing IS

Textbooks

Management Information Systems: Managing the Digital Firm, 8th Edition, Kenneth C. Laudon & Jane P. Laudon, Prentice Hall 2004

Computer Networking: A Top-down Approach Featuring the Internet, 2nd edition, James F. Kurose and Keith W. Ross, Pearson/Addison Wesley 2003

NETS 2150 **Fundamentals of Networking**

6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 hrs lee and 2 hrs prac/wk. **Assumed Knowledge:** Basic computer organization. **Prerequisites:** SOFT(1002 or 1902) or COMP(1001 or 1901) or DECO2011. **Prohibitions:** NETS (2009 or 2909 or 2850), ELEC (3506 or 3504). **Assessment:** One 2hr exam, assignment, quiz, homework exercises.

Computer users often take for granted the ability to access information and services from remote computers. This first course on networking provides an overall or bird's eye view of the networking world and how the networks have evolved. This unit aims to show how the underlying hardware and software components can make this possible. It covers the overall structure of a network involving devices such as hubs, bridges, switches and routers, and the standard communication protocol architectures, namely OSI layered reference model and TCP/IP. It mainly focuses on the physical, data link and network layers of these protocol architectures. It also lays the foundation for later studies on network protocols and programming and security engineering.

Textbooks

Data and Computer Communications, 2003 7th edition, William Starlings, ISBN: 0131006819, Publisher: Pearson-Prentice Hall

NETS 2850 **Fundamentals of Networking (Advanced)**

6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3hrs lee and lhr prac/wk. **Assumed Knowledge:** Basic computer organization. **Prerequisites:** SOFTQ002 or 1902) or COMPQ001 or 1901) or DECO2011 and Distinction in one NETS or SOFT unit. **Prohibitions:** May not be counted with NETS (2009 or 2909 or 2150) or ELEC (3504 or 3506).. **Assessment:** Exam, assignment, quiz, homework exercises.

An advanced alternative to NETS2150; covers material at an advanced and challenging level. See the description of NETS2150 for more information.

Textbooks

Data and Computer Communications, 2003 7th edition, William Stallings, ISBN: 0131006819, Publisher: Pearson-Prentice Hall

SOFT 2130 **Software Construction 1**

6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), UG Study Abroad Program, UG SummerAVinter School. A/Prof Kummerfeld, A/Prof Kay. **Session:** Semester 2, Summer. **Classes:** 2 hrs lecture per week, 3 hrs lab (structured as 2 hrs plus 1 hr) per week. **Prerequisites:** SOFT (1002 or 1902) or COMP (1002 or 1902). **Prohibitions:** COMP (2004 or 2904) or SOFT (2904 or 2004 or 2830).. **Assessment:** Programming assignments, in-lab quizzes, 2 hr written exam.

NB: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.

In this unit of study we cover elementary methods for developing robust, efficient, and re-usable software. The unit is taught in C, in a Unix environment. Specific coding topics include memory management, the pragmatic aspects of implementing data structures such as lists and hash tables, and managing concurrent threads. Debugging tools and techniques are discussed and common programming errors are considered along with defensive programming techniques to avoid such errors. Emphasis is placed on using common Unix tools to manage aspects of the software construction process, such as version control and regression testing. The subject is taught from a practical engineering viewpoint and it includes a considerable amount of programming practice, using existing tools as building blocks to complete a large-scale task. The unit discusses professionalism issues relevant to a career in software development, including intellectual property in software and employment conditions for programmers

Textbooks

TBA

SOFT 2830 **Software Construction 1 (Adv)**

6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. A/Prof Kummerfeld, A/Prof Kay. **Session:** Semester 2. **Classes:** 3 hrs lecture per week, 2 hrs lab per week. **Prerequisites:** SOFT (1002 or 1902) or COMP (1002 or 1902) and Distinction in one of these, or in any SOFT unit at 2000-level or above. **Prohibitions:** COMP (2004 or 2904) or SOFT (2004 or 2904 or 2130).. **Assessment:** Programming assignments, in-lab quizzes, 2 hr written exam.

NB: Students with Credit or above in INFO1903 are encouraged to request special permission to enter this unit.

In this unit of study we learn elementary methods for developing robust, efficient and reusable software. An advanced alternative to SOFT 2130; covers material at an advanced and challenging level. See the description of SOFT 2130 for more information.

Textbooks

TBA

Computer Science and Information Systems Senior units of study

Students are advised that doing less than 24 Senior credit points is not regarded as adequate preparation for a professional career in computing or for further study. Students are advised to balance their workload between semesters. It is important to choose second year subjects appropriately to keep options open for further study. See www.it.usyd.edu.au for advice.

COMP 3308 **Introduction to Artificial Intelligence**

6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 hrs lecture per week, 2 hrs tut (structured as 2 hr block) per week. **Assumed Knowledge:** Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO1903 or SOFT1002. **Prerequisites:** 18 crpts

of 2000-level units. **Prohibitions:** May not be counted with COMP(3002 or 3902 or 3608).. **Assessment:** Assignments, written exam.
Artificial Intelligence (AI) is all about programming computers to perform tasks normally associated with intelligent behaviour. Classical AI programs have played games, proved theorems, discovered patterns in data, planned complex assembly sequences and so on. This unit of study will introduce representations, techniques and architectures used to build intelligent systems. It will explore selected topics such as heuristic search, game playing, machine learning, and knowledge representation. Students who complete it will have an understanding of some of the fundamental methods and algorithms of AI, and an appreciation of how they can be applied to interesting problems. The unit will involve a practical component in which some simple problems are solved using AI techniques.
Textbooks
S.J. Russell and PNorvig, Artificial Intelligence, A Modern Approach, 2d edition Prentice Hall, 0-13-080302-2, 2003

COMP 3608 **Intro, to Artificial Intelligence (Adv)**

6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 hrs lecture per week, 1 hr tut per week. **Assumed Knowledge:** Programming skill, as from SOFT2130 or COMP2160 or from Credit level in INFO 1903 or SOFT 1002. **Prerequisites:** 18 crpts of 2000-level units, and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. **Prohibitions:** May not be counted with COMP(3002, 3902 or 3308).. **Assessment:** Assignments, written exam.
An advanced alternative to COMP3308; covers material at an advanced and challenging level. See the description of COMP3308 for more information.
Textbooks
S.J. Russell and PNorvig, Artificial Intelligence, A Modern Approach, 2d edition Prentice Hall, 0-13-080302-2, 2003

COMP 3309 **Algorithms**

6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 hrs lecture per week, 2 hr tutorial per week. **Assumed Knowledge:** Discrete mathematics. **Prerequisites:** COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902). **Prohibitions:** May not be counted COMP(3111 or 3811), COMP(3001 or 3901) or COMP3609.. **Assessment:** Assignments, written exam.
This unit will discuss techniques of algorithm design and analysis and their applications. The contents include review of analysis of algorithms; divide and conquer; greedy algorithms; dynamic programming; preprocessing; case study of sorting/selection; case study of pattern matching; case study of graph algorithms; randomised algorithms; NP completeness; approximation algorithms for NPC problems.
Textbooks
Introduction to Algorithms, Second Edition,
Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein,
MIT Press, 2002

COMP 3609 **Algorithms (Advanced)**

6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 hrs lecture per week, 1 hr tut per week. **Assumed Knowledge:** Discrete mathematics. **Prerequisites:** COMP(2160 or 2860) or COMP(2111 or2811) or COMP(2002 or 2902), and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. **Prohibitions:** COMP(3111 or 3811 or 3001 or 3901 or 3309). **Assessment:** Assignments, written exam.
An advanced alternative to COMP3309; covers material at an advanced and challenging level. See the description of COMP3309 for more information.
Textbooks
Introduction to Algorithms, Second Edition,
Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein,
MIT Press, 2002

COMP 3310 **Theory of Computation**

6 credit points. B A, B Com, B E, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Prof. Peter Eades. **Session:** Semester 2. **Classes:** Two lhr lectures, one 2hr tutorial. **Prerequisites:** COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902). **Prohibitions:** COMP (2003 or 2903 or 3610). **Assessment:** Assignments
One 2 hr exam.
This unit explores the fundamental nature of computing. We investigate the expressive power of computer languages, and learn how to describe them with grammars. We discuss the computational power of computers: what can be computed, and what cannot be computed; what can be computed efficiently?
Textbooks
Lecture Notes

COMP 3610 **Theory of Computation (Advanced)**

6 credit points. B A, B Com, B E, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Prof. Peter Eades. **Session:** Semester 2. **Classes:** 3 hrs lecture per week, 1 hr tut per week. **Prerequisites:** COMP (2160 or 2860 or 2111 or 2811 or 2002 or 2902), and Distinction in a COMP, SOFT, or MATH unit at 2000-level or above. **Prohibitions:** COMP (2003 or 2903 or 3310). **Assessment:** Assignments
One 2 hr exam.
An advanced alternative to COMP3310; covers material at an advanced and challenging level. See the description of COMP3310 for more information.
Textbooks
Lecture Notes

INFO 3402 **Management of IT Projects and Systems**

6 credit points. B A, B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** Two lhr lectures, one 2hr tutorials per wk. **Prerequisites:** INFO (2000 or 2110 or 2810 or 2900). **Prohibitions:** May not be counted with ISYS (3000 or 3012).. **Assessment:** One two hour exam, 2 written assignments, tutorial preparation, participation and presentation.
This course introduces the basic processes and techniques for managing IT projects, systems and services, throughout the IT lifecycle. It addresses both the technical and behavioural aspects of IT management at the enterprise level. Major topics include: organisational strategy and IT alignment, IT planning, project planning, tracking, resource estimation, team management, software testing, delivery and support of IT services, service level agreements, change and problem management, cost effectiveness and quality assurance.
Textbooks
Martin, E. W., C. V. Brown, et al. (2002). Managing Information Technology. New Jersey, Pearson Education Inc.

INFO 3404 **Database Systems 2**

6 credit points. B A, B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 hrs lee, 2hr tut/wk. **Prerequisites:** INFO(2120 or 2820 or 2005 or 2905). **Prohibitions:** May not be counted with INFO (3005 or 3504 or 3905) or COMP (3005 or 3905).. **Assessment:** Assignments, written exam.
This unit builds on INFO2120 Database Systems 1. It has two main parts.
The first part provides a deeper understanding of the internal mechanisms of a database engine, as it is needed e.g. by Database Administrators (DBA) or Software Engineers for successful performance tuning. Topics include: internal mechanisms in the DBMS engine, database tuning, physical data placement and access structures, query processing and optimisation, transaction management, and security.
The second part focuses on the diversity of post-relational systems, and extensions to the relational data model to support different application needs. Topics include: object-relational systems, semi-structured data including XML, and information retrieval for textual data.
The unit will be of interest to students seeking an introduction to database tuning, disk-based data structures and algorithms, and advanced data models. It will be valuable to those pursuing such careers as Software Engineers, Database Experts, Database Administrators, or e-Business Consultants.

INFO 3504 **Database Systems 2 (Adv)**

6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. -. **Session:** Semester 2. **Classes:** 3 hr lee, 1 hr tut/wk. **Prerequisites:** INFO (2005 or 2120 or 2820 or 2905),and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above. **Prohibitions:** May not be counted with INFO (3005 or 3404 or 3905) or COMP (3005 or 3905).. **Assessment:** Assignments, written exam.
An advanced alternative to INFO3404; covers material at an advanced and challenging level.

ISYS 3400 **Information Systems Project**

6 credit points. B A, B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** Two 1 hour meetings. **Prerequisites:** (INFO3402 or ISYS3012) and (ISYS (3401 or 3015) or ARIN2000). **Prohibitions:** May not be counted with ISYS3207. **Assessment:** Individual presentation, oral examination, group report.
The objective is to enable students to design and implement a solution to a complex data processing problem or to investigate an issue in the management or development of a real-world information system. The project consists of students working together in teams to complete a task of adequate complexity that draws on their education in Information Systems to date. The project will either investigate an issue that is important to the successful practice of the management of Information systems including topics in such areas as end-user computing, IS methodologies, business process re-engineering. Alternatively, it will follow through the life-cycle of systems creation and development and delivery using the traditional tools and methods of the systems analyst.
Textbooks
No textbook

ISYS 3401 **Analytical Methods & Information Systems**

6 credit points. B A, B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 hrs lecture and 2 hrs tut / wk. **Prerequisites:** ISYS (2140 or 2006) and INFO (2000 or 2110 or 2810 or 2900) and (MATH(1005 or 1015 or 1905) or STAT 1021) and (ARIN1000 or ENGL1050 or ENGL1005 or LNGS1001 or LNGS1002 or LNGS1005 or any HPSC unit). **Prohibitions:** May not be counted with ISYS3015. **Assessment:** Assignments, written exam.

This course will provide an introduction to the scientific approach and basic research methods that are relevant for conceptualizing and solving complex problems encountered Information Systems practice. It will guide students through the essential stages of a research project through a variety of case scenarios. A collection of different methods for collecting and analyzing information will be studied in the context of a systems thinking approach to investigative research. These methods include participative methods, surveys, focus groups, controlled experiments and case studies.

Textbooks

Leedy P. and Ornrod J. Practical Research: planning and design (7th ed). Prentice Hall

ISYS 3403 **IT Systems in Arts and Humanities**

6 credit points. B A, B A Informatics, B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Edmund Balnaves. **Session:** Semester 1. **Classes:** 2 hr lectures, 2 hr tutorials /wk. **Prerequisites:** INFO (2000 or 2110 or 2810 or 2900) and INFO (2005 or 2120 or 2820 or 2905). **Prohibitions:** May not be counted with ISYS3113 or EBUS(3002 or 3004).. **Assessment:** Assignments, written exam.

This unit provides a conceptual overview of the key technological directions in Fine Arts, History, New Media, Literature, Politics, & Archaeology. It frames actual technological applications in a theoretical systems context, and builds an understanding of common technological approaches to systems solutions in the Arts and Humanities. Representational technologies such as New Media, Digital Streaming and Content Servers are explored. Concepts underlying Analytical systems and field technologies are also examined to build an understanding of their place in an overall systems context. The course elaborates this understanding through specific experience in web-based scripting, web services, relational database interfaces, XML technologies, and qualitative analysis tools.

MULT 3306 **Multimedia Computing and Processing**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** Three lhr lectures & one 2hr prac/wk. **Prerequisites:** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **Prohibitions:** May not be counted with MULT(3019 or 3919) or MULT(3004 or 3904) or MULT3606 or COMP(3004 or 3904).. **Assessment:** Assignments, written exam.

Multimedia has become an indispensable part of our heterogeneous computing and communication environment. This unit covers basic and advanced topics of coding and manipulating digital media, which mainly include image, audio, video, graphics, animation, etc. It introduces principles and current techniques such as multimedia data processing, content analysis, media coding and compression. It also elaborates different multimedia coding standards such as JPEG, MP3, and MPEG. Various multimedia systems and cutting-edge multimedia applications are presented. Practice of multimedia programming is also covered. In particular, computer graphics (CG) is of fundamental importance in multimedia. It allows us not only to generate and display still pictures, but also to underlie the display of moving pictures and text. CG is the enabling technology for all the visual elements of multimedia. Therefore, in this unit, we pay special attention to computer graphics and examine established CG algorithms, covering such topics as hidden-line elimination, shading and texturing, and ray-tracing. The effects on performance of algorithmic design choices are considered.

MULT 3606 **Multimedia Computing & Processing (Adv)**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 4hrs lecture & lhr tut/wk. **Prerequisites:** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a COMP or MULT or SOFT unit at 2000-level or above. **Prohibitions:** MULT(3019 or 3919 or 3004 or 3904 or 3306) or COMP(3004 or 3904). **Assessment:** Assignments, written exam.

An advanced alternative to MULT3306; covers material at an advanced and challenging level.

MULT 3307 **Interactive Multimedia Systems**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2hr lectures, 2hr tutorials. **Prerequisites:** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **Prohibitions:** May not be counted with SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3607.. **Assessment:** Assignments, written exam.

Interactive multimedia is becoming one of the fastest growing areas in our modern computing and communication industries, and providing effective and flexible access of business, education and cultural information. This unit offers a comprehensive and detailed approach for the design and development of interactive multimedia systems, with maximizing the use of different multimedia building blocks (audio, image, video, graphics and animation). It covers principles and expertise for creation and delivery of interactive multimedia, and looks specifically at media integration, hypermedia design models, human computer interaction, user interface design and programming, multimedia authoring and the design and development process. Practice of creating interactive multimedia systems using a range of programming tools is also included and emphasized.

MULT 3607 **Interactive Multimedia Systems (Adv)**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 hrs lee, 1 hr tut/wk. **Prerequisites:** (COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a MULT or SOFT or INFO or COMP unit at 2000-level or above. **Prohibitions:** May not be counted with SOFT3102, SOFT3802, MULT3018, MULT3918, COMP3102, COMP3802, MULT3307.. **Assessment:** Assignments, written exam.

An advanced alternative to MULT3307; covers material at an advanced and challenging level.

Textbooks

Lecture Notes and some references.

NETS 3303 **Network Protocols & Programming**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. Bjorn Landfeldt. **Session:** Semester 1. **Classes:** 2 hrs lee and 2 hrs prac/wk. **Prerequisites:** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)). **Prohibitions:** May not be counted with NETS(3007 or 3907), COMP(3007 or3907) or NETS3603.. **Assessment:** Assignments, written exam.

Distributed and networked computing has become the norm rather than an exception. Today, the advantages of being able to communicate between computing devices extend beyond computers to incorporate such diverse devices as mobile phones and sensors. This unit covers the mechanisms that enable different computing devices to communicate in networked environments. The focus lies on the fundamental mechanisms and functions that are used to build communication protocols, and the design decisions and system consideration that have to be made for protocols to operate well. In particular, the TCP/IP protocol stack is examined as example protocols. In addition, the unit covers fundamental programming techniques in networked environments. After successful completion of this unit, students are expected to be able to design protocols for specified purposes and also be able to implement protocols according to standardization documents (RFCs).

Textbooks

Douglas Comer, Internetworking with TCP/IP, Principles, Protocols, and Architectures, Fourth Edition ISBN: 0-13-01830-6, Publisher: Pearson-Prentice Hall

NETS 3603 **Network Protocols & Programming (Adv)**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 hrs lee and 1 hr tut/wk. **Prerequisites:** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC(3504 or 3604)) and (SOFT(2130 or 2830) or SOFT(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. **Prohibitions:** May not be counted with NETS(3007 or 3907), COMP(3007 or3907) or NETS3303.. **Assessment:** Assignments, written exam.

An advanced alternative to NETS3303; covers material at an advanced and challenging level.

Textbooks

Douglas Comer, Internetworking with TCP/IP, Principles, Protocols, and Architectures, Fourth Edition ISBN: 0-13-01830-6, Publisher: Pearson-Prentice Hall

NETS 3305 **Computer and Network Security**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2hrs lee and 2hrs tut/wk. **Prerequisites:** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **Prohibitions:** NETS(3016 or 3916), NETS3605 or ELEC(5610 or 5616). **Assessment:** Assignments, written exam.

This unit examines the main issues of security for enterprise systems and networks. It covers confidentiality, integrity, data-origin authentication, non-repudiation, user authentication, access control. At the end of this unit students will know and understand properties of and evaluate a variety of common techniques to address security threats (public-key crypto, private-key crypto, firewalls, role-based access-control, etc). We pay special attention to the variety of attacks to which systems are subjected, and we address ways of managing the risks associated with different attacks. In this unit, cryptography is treated as a tool with given properties; to learn more about crypto-

graphy see units offered by the School of Mathematics and Statistics.

NETS 3605 **Computer and Network Security (Advanced)**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3hrs lectures and lhr tut/wk. **Prerequisites:** (NETS(2150 or 2850) or NETS(2009 or 2909) or ELEC3504 or ELEC3604) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. **Prohibitions:** NETS(3016 or 3916), NETS3305 or ELEC(5610 or 5616). **Assessment:** Assignments, written exam.

An advanced alternative to NETS3305; covers material at an advanced and challenging level.

NETS 3304 **Operating System Internals**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2hr lectures, 2hr tutorials/wk. **Prerequisites:** (ELEC1601 or NETS(2008 or 2908) or COMP(2001 or 2901) or ELEC2601) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)). **Prohibitions:** May not counted with NETS(3009 or 3909 or 3604), COMP(3009 or 3909).. **Assessment:** Assignments, written exam.

NB: Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enrol in this unit.

This unit will provide a comprehensive discussion of relevant OS issues and principles and discuss how those principles are put into practice in real operating systems. The contents include internal structure of OS; several ways each major aspect (process scheduling, inter-process communication, memory management, device management, file systems) can be implemented; the performance impact of design choices; case studies of common OS (Linux, MS Windows NT, etc). The contents also include concepts of distributed systems: naming and binding, time in distributed systems, resource sharing, synchronization models (distributed shared memory, message passing), fault-tolerance, and case study of distributed file systems.

NETS 3604 **Operating Systems Internals (Advanced)**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3hrs lectures, lhr tutorial per week. **Prerequisites:** (ELEC1601 or NETS(2008 or 2908) or COMP(2001 or 2901) or ELEC2601) and (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904)), and Distinction in a NETS or SOFT unit at 2000-level or above. **Prohibitions:** May not counted with NETS(3009 or 3909 or 3304), COMP(3009 or 3909). **Assessment:** Assignments, written exam.

NB: Students who were not able to do ELEC1601, but have the remaining prerequisites, are encouraged to apply for special permission to enroll in this unit.

An advanced alternative to NETS3304; covers material at an advanced and challenging level. See the description of NETS3304 for more information.

SOFT 3300 **Software Development Project**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1, Semester 2. **Classes:** 1 hr lecture or supervision meeting, per week. **Prerequisites:** INFO(2110 or 2810 or 2000 or 2900) and SOFT(2130 or 2830 or 2004 or 2904) or COMP(2004 or 2904), and 12 crpts of 3000-level IT-related units (from Table Ill(iv) or III(v) of the BIT regulations). **Prohibitions:** SOFT(3600 or 3200 or 3700). **Assessment:** Project process documentation, oral presentation, written report.

This unit is a capstone for the undergraduate curriculum. It provides students with the chance to demonstrate their skills in developing a substantial software system, working in a group which needs to carry out the full range of activities including requirements capture, analysis and design, coding, testing and documentation.

SOFT 3600 **Software Development Project (Advanced)**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1, Semester 2. **Classes:** lhr lecture or supervision meeting, per week. **Prerequisites:** (INFO2110 or INFO 2810 or INFO2000 or INFO2900) and (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2904 or COMP2004 or COMP2904), and 12 crpts of 3000-level IT-related units (from Table Ill(iv) or III(v) of the BIT regulations), and Distinction in any 2000-level or above IT-related unit. **Prohibitions:** May not be counted together with any of: SOFT (3300 or 3200 or 3700). **Assessment:** Project process documentation, oral presentation, written report.

An advanced alternative to SOFT3300; covers material at an advanced and challenging level.

SOFT 3301 **Software Construction 2**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2hrs lecture, 2hrs tutorial per week. **Prerequisites:** SOFT(2130 or 2830 or 2004 or 2904) or COMP (2004 or COMP2904). **Prohibitions:** May not be counted with SOFT(3601, 3104, 3804) or COMP(3008 or COMP3908). **Assessment:** Programming assignments, in-lab quizzes, written exam.

At the end of this course you should have an easy familiarity with C++ and know when (and when not) to use it to solve a problem. In particular, we deal with those issues which differ from Java and C, including multiple inheritance, name spaces, destructors, the difference between virtual and non-virtual overriding, and templates. You should be comfortable reading the STL source. You will know many of the recognized Design Patterns, and be able to use them appropriately to evaluate and improve (refactor) existing code. You will have experience with coding using an Integrated Development Environment.

SOFT 3601 **Software Construction 2 (Advanced)**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3hrs lecture, lhr tutorial per week. **Prerequisites:** (SOFT2130 or SOFT2830 or SOFT2004 or SOFT2004 or COMP2004 or COMP2904), and Distinction in any 2000-level or above SOFT or INFO unit. **Prohibitions:** May not be counted with SOFT3301, SOFT3104, SOFT3804, COMP3008 or COMP3908.. **Assessment:** Programming assignments, in-lab quizzes, written exam.

An advanced alternative to SOFT 3301; covers material at an advanced and challenging level.

SOFT 3302 **Software Quality Assurance**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2hrs lecture, 2hrs tutorial per week. **Prerequisites:** (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))). **Prohibitions:** May not be counted with SOFT(3602 or 3103 or 3803). **Assessment:** Programming assignments, in-lab quizzes, written exam.

This unit will discuss ways in which the quality of software systems can be enhanced through processes that occur within the Software Development Life Cycle (SDLC). We cover both agile methodologies such as extreme programming (XP), and heavier methodologies such as Rational's RUP. We deal with ways to enhance quality of designs and of code construction, and we particularly emphasize the role of testing, for functionality and also for nonfunctional issues such as performance, usability, conformance to policy). You will learn to produce a testing strategy, starting from a careful analysis of the risks faced by the system; this strategy is elaborated into a detailed test plan. You will evaluate test plans in terms of coverage and contribution to system reliability. Emphasis is also placed on the management of the testing activity, especially on tracing from test results back to the aspect of the requirements being tested. You will have experience using some automated tools for managing the testing process.

SOFT 3602 **Software Quality Assurance (Adv)**

6 credit points. B A, B C S T, B E, B IT, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 hrs lecture per week, 1 hr tutorial per week. **Prerequisites:** (INFO(2110 or 2810) or INFO(2000 or 2900)) and ((COMP(2160 or 2860) or COMP(2111 or 2811) or COMP(2002 or 2902)) or (SOFT(2130 or 2830) or SOFT(2004 or 2904) or COMP(2004 or 2904))), and Distinction in any 2000-level or above SOFT or INFO unit. **Prohibitions:** May not be counted with SOFT(3302 or 3103 or 3803) or, COMP(3008 or COMP3908). **Assessment:** Programming assignments, in-lab quizzes, written exam.

An advanced alternative to SOFT 3302; covers material at an advanced and challenging level.

Computer Science Honours

To be awarded Honours in Computer Science, a student must complete units of study to a total of 48 credit points, as approved by the School and the Faculty, as follows: 6 credit points of research preparation through the unit INFO 4990, covering a literature review and research plan, 18 credit points of research project through the unit INFO 4991 and 4992, and 24 credit points of coursework units of study, which, except with permission of the School and Faculty, must all be from 4000-level units of study which are in the subject area of Computer Science (that is, units of study or selected 5000-level units of study (see Honours units of study). Seek special permission from the School of Information Technologies for 5000-level units.

Note that the Faculty requires that Honours be completed in two consecutive semesters of full-time study, or four consecutive semesters of part-time study; a single final grade and mark is given for the Honours course, as determined by the Faculty based on performance in Honours and in prior undergraduate study.

Honours units of study

COMP 4045 **Computational Geometry**

6 credit points. B C S T (Hons), B I T (Hons), B Sc (Hons). **Session:** Semester 1. **Classes:** 2 hrs/wk scheduled small-group class, plus 10 hrs/wk private work. **Assumed Knowledge:** Data structures, analysis of algorithms. **Prerequisites:** Credit average in 24 credit points of 3000-level study. **Assessment:** Practical assignments, written assignments, exam.

Geometric data are used in fields including information and scientific visualisation, image processing, pattern recognition, chip layout,

and geographic information systems. This unit focuses on the study of computational algorithms which efficiently process geometric data. Students will approach relevant research being done in the University of Sydney.
Textbooks
M. de Berg, et al "Computational Geometry: Algorithms and Applications", Springer (2000)

COMP 4046 **Statistical Natural Language Processing**
6 credit points. B C S T (Hons), B I T (Hons), B Sc (Hons). **Session:** Semester 1. **Classes:** 2 hrs/wk scheduled small-group class, plus 10 hrs/wk private work. **Assumed Knowledge:** Concepts of linguistics, elementary statistics, AI techniques. **Prerequisites:** Credit average in 24 credit points of 3000-level study. **Assessment:** Practical assignments, written assignments, exam.
This unit deals with techniques that allow computers to handle natural human languages (such as English, French), by analysis of large corpora of text. Particulat emphasis is given to methods that analyse the meaning in texts, the categorisation of texts, and the general application of machine learning methods to these topics. Students will approach the relevant research being done in the University of Sydney.

COMP 4048 **Information Visualisation**
6 credit points. B C S T (Hons), B I T (Hons), B Sc (Hons). **Session:** Semester 2. **Classes:** 2 hrs/wk scheduled small-group class, plus 10 hrs/wk private work. **Assumed Knowledge:** Discrete mathematics. **Prerequisites:** Credit average in 24 credit points of 3000-level study. **Assessment:** Practical assignments, written assignments, exam.
This unit provides knowledge of the concepts techniques and algorithms involved in producing graphical representations of relational information, especially graph drawings. Students will approach relevant research in the University of Sydney.
Textbooks
C. Ware "Information Visualisation" Morgan Kaufman (2000); R. Spence "Information Visualisation" Addison-Wesley (2000)

COMP 5318 **Knowledge, Discovery and Data Mining**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT, Grad Dip App Sc (M B T), PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** COMP5138 Relational Database Management Systems. **Assessment:** Assignments, written exam.
Knowledge discovery is the process of extracting useful knowledge from data. Data mining is a discipline within knowledge discovery that seeks to facilitate the exploration and analysis of large quantities of data, by automatic or semiautomatic means. This subject provides a practical and technical introduction to knowledge discovery and data mining.
Objectives: Topics to be covered include problems of data analysis in databases, discovering patterns in the data, and knowledge interpretation, extraction and visualisation. Also covered are analysis, comparison and usage of various types of machine learning techniques and statistical techniques: clustering, classification, prediction, estimation, affinity grouping, description and scientific visualisation.

COMP 5338 **Advanced Data Models**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert **I**T. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** COMP5138 Relational Database Management Systems. **Prohibitions:** COMP5306. **Assessment:** Assignments, written exam.
This course will offer a comprehensive survey of post-relational data models and technologies with significant emphasis on XML and content management on the world wide web. The important challenges in managing the complex and varied data in modern database environments will be specifically addressed.

COMP 5347 **e-Commerce Technology**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT, Grad Dip App Sc (M B T), M E S (Manuf Com Bus Man), PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** COMP5028 Object Oriented Analysis and Design. **Assessment:** Assignments, written exam.
This unit will focus on technological advances supporting the development of e-commerce applications and systems. This includes server-side development of e-business applications, methodologies and practices for the development of web-applications, J2EE/Java-based support for front-end development, XML processing, and database integration, as well as web services development (SOAP, WSDL, UDDI) and handheld wireless integration.

COMP 5348 **Enterprise Scale Software Development**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert **I**T. **Session:** Semester 1. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** COMP5028 Object Oriented Analysis and Design and COMP5148 Quality Software Development in Practice. **Assessment:** Assignments, exam.
This unit covers a range of approaches for constructing large-scale computer-based systems which can deal with data and business processes through a large company or other organisation. In building software on this scale, it is essential to integrate existing "legacy" code and data stores. The unit includes a study of both middleware technologies and process management techniques needed to develop enterprise scale computer-based systems.

COMP 5416 **Advanced Network Technologies**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert **I**T. **Session:** Semester 2, Semester 1. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** COMP5116 Internet Protocols and COMP5126 Distributed Systems Programming. **Assessment:** Assignments, written exam.
The unit introduces networking concepts beyond the best effort service of the core TCP/IP protocol suite. Provides understanding of the fundamental issues in building an integrated multi-service network for global Internet services, taking into account service objectives, application characteristics and needs and network mechanisms. Enables students to understand the core issues and be aware of proposed solutions so they can actively follow and participate in the development of the Internet beyond the basic bit transport service.

COMP 5424 **Information Technology in Biomedicine**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT, Grad Dip IT, M Inf Tech. **Session:** Semester 1. **Classes:** 2 lee, 1 tut/wk. **Assessment:** Assignments, written exam.
Specialist/Elective
Information technology (IT) has significantly contributed to the research and practice of medicine, biology and health care. The IT field is growing enormously in scope with biomedicine taking a lead role in utilizing the evolving applications to its best advantage. The goal of this unit is to provide students with the necessary knowledge to understand the information technology in biomedicine. The major emphasis will be on the principles associated with biomedical digital imaging systems and their applications, computer modeling of biomedical systems, and biomedical system identification. Specialist areas such as medical image compression, telemedicine, Picture Archiving and Communication System (PACS), and web technology in biomedicine etc. will also be addressed.

COMP 5425 **Multimedia Storage, Retrieval & Delivery**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert **I**T. **Session:** Semester 1. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** COMP 5122 Multimedia Human Computer Interaction. **Assessment:** Assignments, written exam.
The unit covers Multimedia Storage and Compression, fundamental compression techniques, audio storage and compression, image storage and compression (JPEG, JBIG and JPEG2000), video storage and compression (MPEG, MPEG1, MPEG2, MPEG4 and MPEG7), Multimedia Information Retrieval information retrieval fundamentals, visual information retrieval, video cataloguing and retrieval issues of multimedia systems and delivery image watermarking, video watermarking, video encryption, future HCI, progressive transmitted images and video, multicasting control, immersive video for future digital TV

COMP 5426 **Network Based High Performance Computing**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert **I**T, M E S (Net Eng). **Session:** Semester 1. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** COMP5126 Distributed Systems Programming. **Assessment:** Assignments, written exam.
This unit is intended to introduce and motivate the study of high performance computer systems. The student will be presented with the foundational concepts pertaining to the different types and classes of high performance computers. The student will be exposed to the description of the technological context of current high performance computer systems. Students will gain skills in evaluating, experimenting with, and optimizing the performance of high performance computers. The unit also provides students with the ability to undertake more advanced topics and courses on high performance computing.

Information Systems Honours
To be awarded Honours in Information Systems, a student must complete units of study to a total of 48 credit points, as approved by the School and the Faculty, as follows: 6 credit points of research preparation through the unit INFO 4990, covering a literature review and research plan, 18 credit points of research project through the unit INFO 4991 and 4992, and 24 credit points of coursework units of study, which, except with permission of the School and Faculty, must all be from 4000-level units of study which are in the subject area of Information Systems (that is, units of study or selected 5000-level units of study (see Honours units of study). Seek special permission from the School of Information Technologies for 5000-level units.

Note that the Faculty requires that Honours be completed in two consecutive semesters of full-time study, or four consecutive semesters of part-time study; a single final grade and mark is given for the Honours course, as determined by the Faculty based on performance in Honours and in prior undergraduate study.

Honours units of study

INFO 4010 **IT Advanced Topic A**
6 credit points. B C S T (Hons), B I T (Hons), B Sc (Hons). **Session:** Semester 1. **Classes:** 2 hrs/wk scheduled small-group class, plus 10 hrs/wk private work. **Prerequisites:** Permission of Head of School. **Assessment:** Practical assignments, written assignments, exam.
NB: Department permission required for enrolment.
This unit will cover some topic of active research within IT; it will change in content depending on special opportunities such as a distinguished researcher visiting the University. Topics depend upon staff availability.

INFO 4011 **IT Advanced Topic B**
6 credit points. B C S T (Hons), B I T (Hons), B Sc (Hons). **Session:** Semester 2. **Classes:** 2 hrs/wk scheduled small-group class, plus 10 hrs/wk private work. **Prerequisites:** Permission of Head of School. **Assessment:** Practical assignments, written assignments, exam.
NB: Department permission required for enrolment.
This unit will cover some topic of active research within IT; it will change in content depending on special opportunities such as a distinguished researcher visiting the University. Topics depend upon staff availability.

INFO 4990 **IT Research Methods**
6 credit points. B C S T (Hons), B IT (Hons), B Sc (Hons), M Inf Tech Man. **Session:** Semester 1, Semester 2. **Classes:** 3 hrs/wk scheduled small-group class, plus 9 hrs/wk private work (including interaction with research supervisor). **Assumed Knowledge:** Elementary statistics. **Assessment:** Written papers (critical evaluation of a research paper, literature survey, research plan, thesis structure) and oral presentation.
NB: Department permission required for enrolment.
This unit forms a key foundation for the student's work on their IT-related research project within an Honours degree. It introduces the varied approaches to research common in different fields of IT, such as experimentation, simulation, prototyping/design, mathematical proof, surveys, and interpretive methods. The main focus is on understanding how research is done, and how it is evaluated. Key assessment tasks include writing a critical evaluation of a research paper from the literature, a survey of the literature within some topic, a research plan, and a presentation of a research plan. It is expected that the student would use their thesis research as the basis for this assessment, and use feedback provided in this unit to improve the work for inclusion in the final thesis.

ISYS 4050 **Knowledge Management Systems**
6 credit points. B C S T (Hons), B I T (Hons), B Sc (Hons). **Session:** Semester 1. **Classes:** 2 hrs/wk scheduled small-group class, plus 10 hrs/wk private work. **Assumed Knowledge:** Information systems concepts, database concepts. **Prerequisites:** Credit average in 24 credit points of 3000-level study. **Assessment:** Practical assignments, written assignments, exam.
This unit will provide a comprehensive introduction to the emerging area of Knowledge Management from both technological and organisational perspectives. Topics include document repositories, ontologies and the semantic web, customer relationship management systems, communities of practice, and computer-supported cooperative work. Students will approach relevant research being done in the University of Sydney.

NETS 4047 **Pervasive Computing**
6 credit points. B C S T (Hons), B I T (Hons), B Sc (Hons). **Session:** Semester 2. **Classes:** 2 hrs/wk scheduled small-group class, plus 10 hrs/wk private work. **Assumed Knowledge:** Networking concepts, operating system concepts, programming expertise. **Prerequisites:** Credit average in 24 credit points of 3000-level study. **Assessment:** Practical assignments, written assignments, exam.
Pervasive computing deals with the likely future where many computational devices are widely dispersed in the environment: there will be sensors in rooms, people will carry PDAs or mobile phones with capacity for running sophisticated software, etc, there may be chips in one's clothing. Key isues include communication between the devices and humans; interpretation of, and adapting computation to, the human context; managing the information and communication efficiently so knowledge gets to the places where it is needed. Students will approach the relevant research being done in the University of Sydney.

INFO 4991 **IT Research Thesis A**
6 credit points. B C S T (Hons), B I T (Hons), B Sc (Hons). **Session:** Semester 1, Semester 2. **Classes:** 12 hrs/wk research work (including interaction with supervisor and research group). **Corequisites:** INFO4990 and ESTF04992. **Assessment:** Thesis.
Together with INF04992, this unit covers the research and writing of the student's Honours thesis.

INFO 4992 **IT Research Thesis B**
12 credit points. B C S T (Hons), B IT (Hons), B Sc (Hons). **Session:** Semester 1, Semester 2. **Classes:** 24 hrs/wk research work (including interaction with supervisor and research group). **Corequisites:** INFO4990 and INF04991. **Assessment:** Thesis.
Together with INF04991, this unit covers the research and writing of the student's Honours thesis.

INFO 4999 **Computer Science Honours Result**
0 credit points. B C S T (Hons), B Sc (Bioinformatics)(Hons), B Sc (Hons). **Session:** Semester 1, Semester 2. **Prerequisites:** Permission of the Head of Department.
NB: Department permission required for enrolment.
All students in Computer Science Honours must enrol in this non assessable unit of study in their final semester.

Law units of study

The following units of study are only available to students in the Bachelor of Science/Bachelor of Laws degree. Please consult degree information in chapter 2, the Tables earlier in this chapter and the relevant Departments/Schools entries in this chapter for descriptions of other units of study required for this degree.
The Faculty of Law is undertaking a curriculum review, anticipated to be completed in 2007. Combined law students are expected to complete 48 credit points of Law units of study in the first three years of the combined degree. Third year combined law students who are not able to accumulate 48 credit points of Law units of study using the unit of study codes in Table 2 as it appears earlier in this Chapter must contact the Faculty of Law for alternative unit of study codes for Federal Constitutional Law and Law, Lawyers and Justice.

LAWS 1006 **Foundations of Law**
6 credit points. B A, LL B, B Com, LL B, B Ec, LL B, B Ec Soc Sc, LL B, B Sc, LL B, UG Study Abroad Program. **Session:** Semester 1. **Classes:** One 1 hr lecture & Two 2 hr seminars per week.
NB: Unit is part of Combined Law.
This unit of study provides a foundation core for the study of law. We aim to provide a practical overview of the Australian legal system, an introduction to the skills of legal reasoning and analysis which are necessary to complete your law degree, and an opportunity for critical engagement in debate about the role of law in our lives. The course will introduce students to issues such as:
- the development of judge made and statute law
- the relationship between courts and parliament
- the role and function of courts, tribunals and other forms of dispute resolution
- understanding and interrogating principles of judicial reasoning and statutory interpretation
- the relationship between law, government and politics
- what are rights in Australian law, where do they come from and where are they going

We will have a particular focus on indigenous Australia in exploring many of these issues, for example through the landmark Mabo decision.

LAWS 1010 **Torts**
6 credit points. B A, LL B, B Com, LL B, B Ec, LL B, B Ec Soc Sc, LL B, B Sc, LL B, UG Study Abroad Program. **Session:** Semester 2. **Classes:** Two 2 hr seminars per week. **Prerequisites:** LAWS 1000 or LAWS 1006 Foundations of Law. **Prohibitions:** LAWS3001 Torts.
NB: Unit is part of the Combined Law program for students commencing in 2006.
This is a general introductory unit of study concerned with liability for civil wrongs. The unit seeks to examine and evaluate, through a critical and analytical study of primary and secondary materials, the function and scope of modern tort law and the rationale and utility of its governing principles.
Particular topics on which the unit will focus include:
(a) The relationship between torts and other branches of the common law including contract and criminal law;
(b) The role of fault as the principal basis of liability in the modern law;
(c) Historical development of trespass and the action on the case and the contemporary relevance of this development;
(d) Trespass to the person (battery, assault, and false imprisonment);
(e) Interference with goods (trespass, detinue and conversion)
(f) Trespass to land;
(g) The action on the case for intentional injury;
(h) Defences to trespass, including consent, intellectual disability, childhood, necessity and contributory negligence;
(i) Development and scope of the modern tort of negligence, including detailed consideration of duty of care, breach of duty, causation and remoteness of damage and assessment of damages;

(j) Injuries to relational interests, including compensation to relatives of victims of fatal accidents;
(k) Concurrent and vicarious liability;
(1) Defences to negligence;
(m) Breach of statutory duty;
(n) Nuisance; and
(o) Liability for animals.

LAWS 1008 **Legal Research**

0 credit points. B A, LL B, B Com, LL B, B E, LL B, B Ec, LL B, B Ec Soc Sc, LL B, B Sc, LL B, LL B, UG Study Abroad Program. **Session:** Semester 1, Semester 2. **Classes:** 1hr per week over eleven weeks for Combined Law; 2hrs per week over seven weeks for Graduate Law.

This unit is a compulsory component of the Bachelor of Laws degree.

* Combined Law students undertake tuition at the Law School in their first year, with classes offered in either first or second semester depending on timetabling. The semester 1 'host' law unit will be Legal Institutions, and in semester 2 the 'host' law unit will be Torts.

* Graduate Law students undertake tuition in first semester of the first year. The 'host' substantive law subject will be Criminal Law.

The subject Legal Research aims:

* to promote the proficient use by all students of a law library;

* to introduce students to major Australian legal research aids, both in hard-copy and electronic format, and to discourage dependency;

* to provide students with practice in finding and analysing relevant primary and secondary materials;

* to promote efficient and effective research methods.

Legal Research is graded on a Pass/Fail basis. Attendance at all classes is mandatory. Classes will be of one hour duration, one per week, for eleven weeks for Combined Law students; of two hours duration, one per week, for seven weeks for Graduate Law students. Numbers will be limited to a maximum of 16 in each class. There will be continuous assessment throughout the semester. These will be one compulsory assignment and one compulsory exam.

LAWS 2008 **Contracts**

6 credit points. B A, LL B, B Com, LL B, B Ec, LL B, B Ec Soc Sc, LL B, B Sc, LL B, LL B, UG Study Abroad Program. **Session:** Semester 1. **Classes:** Two 2 hr seminars per week. **Prerequisites:** LAWS 1000 or LAWS 1006 Foundations of Law. **Prohibitions:** LAWS 1002.

Contract law provides the legal background for transactions involving the supply of goods and services and is, arguably the most significant means by which the ownership of property is transferred from one person to another. It vitally affects all members of the community and a thorough knowledge of contract law is essential to all practising lawyers. In the context of the law curriculum as a whole, Contracts provides background which is assumed knowledge in many other units.

The aims of the unit are composite in nature. The central aim is to provide an understanding of the basic principles of the common law, equity and statutes applicable to contracts. A second aim is to provide students an opportunity to critically evaluate and make normative judgments about the operation of the law. As Contracts is basically a case law unit, the final aim of the unit of study is to provide experience in problem solving through application of the principles derived from decided cases. Successful completion of this unit of study is a prerequisite to the option Advanced Contracts.

LAWS 2009 **Criminal Law**

6 credit points. B A, LL B, B Com, LL B, B Ec, LL B, B Ec Soc Sc, LL B, B Sc, LL B, LL B, UG Study Abroad Program. **Session:** Semester 2. **Classes:** Two 2 hr seminars per week. **Prohibitions:** LAWS 1003.

February Semester classes are for students in Graduate Law and July Semester classes are for students in Combined Law.

The Graduate Law class will commence in Week 2, to accomodate the Legal Institutions intensive. This unit of study is designed to introduce the general principles of criminal law and process as they operate in NSW, and to critically analyse these in their contemporary social context. In order to achieve these goals, the unit will consider a range of socio-legal literature, and will focus on particular substantive legal topics. Although the topic structure is necessarily selective, it is intended that students will gain a broad understanding of crime and justice issues, as well as of the applications of the criminal law. Students will encounter problem-based learning and will be encouraged to challenge a range of conventional wisdom concerning the operation of criminal justice. This unit of study is designed to assist students in developing the following understandings:

(1) A critical appreciation of certain key concepts which recur throughout the substantive criminal law.

(2) A knowledge of the legal rules in certain specified areas of criminal law and their application.

(3) A preliminary understanding of the working criminal justice system as a process and the interaction of that process with the substantive criminal law.

(4) A preliminary knolwedge of how the criminal law operates in its broader societal context.

(5) Through following the process of proof in a criminal prosecution and its defense, to understand the determination of criminal liability.

The understandings referred to in the foregoing paragraphs will have a critical focus and will draw on procedural, substantive, theoretical and empirical sources. The contradictions presented by the application of legal principle to complex social problems will be investigated.

LAWS 3000 **Federal Constitutional Law**

10 credit points. B A, LL B, B Com, LL B, B Ec, LL B, B Ec Soc Sc, LL B, B Sc, LL B, UG Study Abroad Program. **Session:** Semester 1. **Classes:** Two 2 hr seminars per week. **Prerequisites:** LAWS 1000 or 1006, Foundations of Law.

NB: Unit is part of Combined Law.

This unit of study aims to achieve an understanding of the principles of Australian constitutional law. The unit commences with a development of an understanding of Australia's constitutional independence, parliamentary sovereignty, indigenous rights and the concepts of representative and responsible government. Further topics covered include federalism (including the external affairs power and the relationship between Commonwealth and state laws); economic and financial power and relations (including the corporations power, the trade and commerce power, freedom of interstate trade, and excise); the doctrine of separation of powers and judicial power of the Commonwealth; express and implied constitutional rights; and principles of constitutional interpretation. The unit aims to develop a capacity to evaluate the principles critically, with regard to political theory and the social context within which cases have been decided.

LAWS 3002 **Law, Lawyers and Justice**

10 credit points. B A, LL B, B Com, LL B, B Ec, LL B, B Ec Soc Sc, LL B, B Sc, LL B, UG Study Abroad Program. **Session:** Semester 2. **Classes:** Two 2 hr seminars per week.

NB: Unit is part of the Combined Law program.

Law, Lawyers and Justice has a distinct intellectual focus. It is the only unit in the curriculum that concentrates on the regulation of the legal profession and legal practice. Part 1 of Law, Lawyers and Justice examines the nature and structure of the legal profession, historical struggles to regulate the profession, and the current regulatory regime in New South Wales. Part 2 explores specific forms of legal practice, highlights the major cultural and economic forces that challenge attempts to regulate the profession and canvasses alternative ways of organising legal practice and providing legal services. Part 3 investigates the adversary system and considers its advantages and limitations. More specifically, the material in Part 3 addresses how the adversary system moulds lawyers' behaviour within and outside the judicial process and analyses current regulatory measures aimed at curbing the undesirable aspects of an adversarial culture. Part 4 evaluates the way clients are treated by lawyers and suggests strategies to change their conduct in the interests of both equality and effective communication. Furthermore, it examines lawyer's duties to their clients and the ways in which the rules and principles of confidentiality, legal professional privilege and conflicts of interest shape the advice and representation lawyers provide for their clients.

Liberal Studies units of study

The Bachelor of Liberal Studies degree is offered jointly by the Faculties of Science and Arts. The Faculty of Arts administers the degree program. Liberal Studies students should consider the Faculty of Arts their home Faculty for administrative purposes.

The following units of study form part of the requirements of the Bachelor of Liberal Studies degree. Please consult degree information in Chapter 2, the Tables earlier in this chapter, and the relevant Departments/Schools entries in this chapter for descriptions of other units of study required for this degree.

ENGL 1000 **University English**

6 credit points. B A, B E, B S T, UG Study Abroad Program, UG Summer/Winter School. Dr. Thomas. **Session:** Semester 1, Semester 2, Summer, Winter. **Classes:** One 1-hr lecture and one 2-hr workshop per week. **Prerequisites:** This unit is available to all enrolled students and will count for credit across all faculties. There are no specific pre-requisites, co-requisites or prohibitions, but students are expected to have native or near native fluency in English. ENGL 1000 cannot be counted towards the junior credit points required to enrol in senior units of English. **Assessment:** One 750-word essay
One 1500-word essay
One 1000-word critical reading task

One oral presentation
A weekly journal.
University English is a practical unit designed to improve student writing at all undergraduate levels in a variety of formats across a range of disciplines. It is taught by means of lecture and workshops organized around exercises in rhetoric, style and grammar. Many writing and editing assignments are drawn from actual university documents, including examples of 'real' student writing.
Textbooks
The Elements of Style (Strunk and White), Fourth Edition and The Essentials of Academic Writing (Soles), First Edition

ENGL 1005 **Language and Image**
6 credit points. B A, B A (Media & Comm), B Int S, Dip Arts, UG Study Abroad Program. Mr. Ronalds. **Session:** Semester 2. **Classes:** One lhr lecture and one 2hr workshop. **Prohibitions:** ENGL 1050. **Assessment:** Two 500wd assignments, one 1500wd essay, one 1.5hr examination, and workshop participation.
This unit of study will introduce students to the construction of meaning in written and visual texts, using Graham Greene's novel The Quiet American and the film of the novel as focal points.
A range of other fiction, academic and media texts will be used to explore social processes of textual construction and interpretation. In the workshops, students will learn detailed analytic techniques, including close grammatical analysis, as tools for the interpretation of text and image. The lectures will introduce more descriptive topics, such as historical shifts in relations between language and image, narrative organisation, categories of text, and social agency and power in the production of text.
Textbooks
Greene, G. The Quiet American
Butt, D., et al., Using Functional Grammar: An Explorer's Guide.
A Resource Book will be available from the University Copy Centre

LNGS 1005 **Structure of English**
6 credit points. B A, B Int S, B Sc, B Com, Dip Arts, UG Study Abroad Program. Dr Jane Simpson. **Session:** Semester 1. **Classes:** One one-hour lecture with one lhr seminar & one optional lhr tutorial per week. **Prohibitions:** LNGS 1001 or LNGS 1004. **Assessment:** one lhr exam, various written assignments and 1 essay.
This unit looks at the structure of English from the point of view of modern linguistics and focusses on written and spoken academic English. It will be especially valuable to non-native speakers of English in giving them an overview of how and why English works the way it does. Topics covered include: English vocabulary, phonetics; intonation; word types; count and mass nouns; verb types and sentence structures; auxiliary verbs and tense and mood; voice, topicality and information structure. Knowledge about the structure of English will be used to improve students' writing skills in collaboration with the Learning Centre.

Marine Science
The University of Sydney Institute of Marine Science (USIMS) provides for undergraduate units of study of a transdisciplinary nature in the marine sciences at the Intermediate, Senior and Honours levels. Staff from the School of Biological Sciences and the School of Geosciences teach these units. For further information on all units of study, please refer to the Marine Science website (w w w.usy d. edu.au/marine).

MARS 2005 **Global Oceans (Introduction)**
6 credit points. B A, B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Michael Hughes. **Session:** Semester 1. **Classes:** 3 lec/wk + 6 tutorials/sem + 1 day field trip. **Prerequisites:** 24 credit points of Junior units of study from Science Discipline Areas. **Prohibitions:** MARS2001. **Assessment:** One 2hr exam, assignments.
NB: This is a qualifying unit for some Senior Marine Science units. Some Senior electives may have additional prerequisites.
This course is split into two sections: physical and geological oceanography. Major physical oceanography topics include the physical and chemical properties of ocean water, ocean circulation, waves and tides. Major geological oceanography topics include the origins and geological history of ocean basins, ocean volcanism, sediments and continental margins. Both the regional oceanography and continental shelf of Australia are emphasised. Although this is principally a lecture-based course, you will receive feedback on your understanding of the course content through regular assignments and six tutorials. The learning outcome you should expect at the end of the course is a broad knowledge of the fundamental concepts in physical and geological oceanography, and their particular relevance to the Australasian region. This provides the necessary background for senior-level Marine Science courses in which you will learn more advanced concepts, and also become involved in the practical and field-based aspects of marine science.
Textbooks
H.V. Thurman and E.A. Burton, 2001. Introductory Oceanography, 9th Edition. Prentice Hall

MARS 2006 **Marine Ecosystems and Geomorphology**
6 credit points. B A, B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Peter Cowell. **Session:** Semester 2. **Classes:** 3 lee + 6 tutorial/sem + 1 day field excursion. **Assumed Knowledge:** MARS2005. **Prerequisites:** 24 credit points of Junior units of study from Science Discipline Areas. **Prohibitions:** MARS2002 and GEOG2002. **Assessment:** One 2hr exam, assignments.
NB: This is a qualifying unit for Senior Marine Science units. Some Senior electives may have additional prerequisites.
This course is split into two sections: marine biology and coastal geomorphology. The marine biology section describes some of the ways that the properties of the oceans affect marine organisms. It also introduces coral reefs and other marine ecosystems, together with their productivity, biological oceanography, the reproductive biology of marine organisms, and marine biological resources. The coastal geomorphology section provides an introduction to coastal geomorphology by examining the geographic variability of coasts as the sum effect of variations in terrestrial, climatic and oceanographic factors. These factors are introduced in terms of the main physical processes (geology, sea-level, waves, tides, winds) governing coastal geomorphology on a range of space-time scales. Geographic variation in the physical processes is illustrated by reference to the local coast: ie, Sydney. The illustration is amplified by drawing comparisons with other parts of SE Australia, and with overseas examples (especially from coastal environments very different to that of Sydney).
Textbooks
Castro P, Huber M (2003) Marine Biology, 4th edn. McGraw-Hill Higher Education, Sydney

MARS 2007 **Marine Science Field School**
6 credit points. B Sc (Marine Science). Prof Andy Short. **Session:** SI Intensive. **Classes:** Field school, 4 x 3 hr pracs. **Prerequisites:** 24 credit points of Junior Science units. **Corequisites:** MARS (2005 or 2905).. **Prohibitions:** MARS2003. **Assessment:** Participation in field school, 2500w field report.
NB: This unit of study is available to students in the Bachelor of Science (Marine Science) only.
Marine Scientists are generally involved in a wide variety of fieldwork throughout their careers. A detailed knowledge of field methods and techniques is therefore a necessary component in the education of marine scientists. This unit of study introduces students to a range of field issues within the coastal and marine environment during a 5 day field school held prior to commencement of lectures in Semester 1. Many of the field methods focused on are generic across the marine disciplines. In addition, techniques specific to the disciplines of Biological Sciences and Geosciences are taught. Students will be expected to participate in a hands-on way, undertaking small project-based data collection exercises during the field school. These data will provide resources for the practical part of the course undertaken during semester.
Textbooks
Castro P, Huber M (2003) Marine Biology, 4th edn. McGraw-Hill Higher Education, Sydney
Pechenik JA (2003) A Short Guide to Writing About Biology, 5th edn. Addison Wesley Longman, Sydney

MARS 2905 **Global Oceans (Introduction) (Advanced)**
6 credit points. B A, B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Michael Hughes. **Session:** Semester 1. **Classes:** 3 lec/wk + 6 tutorials/sem + 1 day field trip. **Prerequisites:** 24 credit points of Junior Science units. **Prohibitions:** MARS2005, MARS200L. **Assessment:** One 2hr exam, 8 assignments, participation in field trip activities.
NB: This unit of study is available to advanced students only.
Qualified students will participate in alternative components of MARS2005, while sharing the same lectures. The content and nature of these components may vary from year to year.
Textbooks
H.V. Thurman and E.A. Burton, 2001. Introductory Oceanography, 9th Edition. Prentice Hall.

MARS 2906 **Marine Ecosystems and Geomorphology Adv**
6 credit points. B A, B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Peter Cowell. **Session:** Semester 2. **Classes:** 3 lee + 6 tutorial/sem + 1 day field excursion. **Prerequisites:** 24 credit points of Junior units of study from Science Discipline Areas. **Prohibitions:** MARS2006, MARS2002, GEOG2002.. **Assessment:** One 2hr exam and assignments.
NB: This unit of study is available to advanced students only.
Qualified students will participate in alternative components of MARS2006, while sharing the same lectures. The content and nature of these components may vary from year to year.
Textbooks
Castro P, Huber M (2003) Marine Biology, 4th edn. McGraw-Hill Higher Education, Sydney

MARS 2907 **Marine Science Field School (Advanced)**
6 credit points. B A, B Res Ec, B Sc, B Sc (Environmental), B Sc (Marine Science). Prof Andy Short. **Session:** SI Intensive. **Classes:** Field school and prac/sem 3hr/wk. **Prerequisites:** 24 credit points of Junior Science units. **Corequisites:** MARS (2005 or 2905). **Prohibitions:** MARS2007, MARS2003.. **Assessment:** 2500w field report and participation in field school activities.

NB: This unit of study is available to advanced students only.
Qualified students will participate in alternative components of MARS2007, while sharing the same practical and fieldwork. The content and nature of these components may vary from year to year.

Marine Science Senior units of study
Students intending to major in Marine Science should enrol in Senior units of study to a total worth of 24 credit points from the list below. Students in the Bachelor of Science (Marine Science) must enrol in a minimum of 36 credit points of Senior Marine Science units of study, which may include up to 3 Tropical Marine Science (NTMP) units. Students are encouraged to select those electives in which they have a particular interest, subject to certain conditions (see Table 1). Because of limited facilities available for some units of study, particularly in marine biology, it may be necessary to restrict number of students taking these electives. If this need arises selection will be based on academic merit and/or other courses completed. All students intending to enrol in any of the biology options must consult the booklet information for Students Considering Senior Biology Units of Study available from the School of Biological Sciences Office during the last few weeks of the academic year prior to this enrolment. Each student should also complete a preliminary enrolment form in the School of Biological Sciences before first semester commences.
Descriptions of options
Students should consult electives as listed in this chapter under Biological Sciences and Geosciences in this handbook.
BIOL3006 Ecological Methods
BIOL3007 Ecology
BIOL3008 Marine Field Ecology
BIOL3011 Ecophysiology
BIOL3013 Marine Biology
GEOS3003 Dynamics of Continents and Basins
GEOS3009 Coastal Environments and Processes
GEOS3014 GIS in Coastal Management
GEOS3016 Seafloor Processes and Imaging
GEOS3017 Global Energy Exploration and Exploitation
GEOS3018 Rivers: Science, Policy and Management
(Plus Advanced versions of the above - BIOL39XX, GEOS39XX).

Marine Sciences Honours
Semester: 1, 2.
The structure of Honours in Marine Science (including in Tropical Marine Science for interested students in the Bachelor of Science (Marine Science)) will be about one third formal coursework, seminars and reading, and about two thirds devoted to preparation of a thesis on a topic with a clear marine or estuarine orientation. The formal coursework may comprise units of study mainly chosen from existing Honours options offered in the Department of the student's principal interest. Background study in a subsidiary field of interest may be required.
In general, a Credit average or better in Senior Marine Sciences units of study and at least a Pass in another Senior unit of study are required for entry. Arrangements for the supervision and Department of primary location of students will be made in the light of their proposed thesis topic. Joint supervision involving staff of more than one Department may be arranged if a thesis topic is deemed to be transdisciplinary. Upon acceptance, students should register formally with the Undergraduate Advisor of USIMS.

Tropical Marine Network Program
Students enrolled in the BSc (Marine Science) are be eligible to enrol in units of study offered as part of the Tropical Marine Network Program. This is a joint program of the University of Sydney, the University of Queensland and James Cook University, which offers four units of study in tropical marine science, all taught at marine island research stations off the Queensland coast. The following stations will be used:
- Lizard Island (Australian Museum field station, north of Cairns)
- Orpheus Island (James Cook University field station, off Townsville)
- Heron Island (University of Queensland field station, off Gladstone)
- One Tree Island (University of Sydney field station, off Gladstone)
- North Stradbroke Island (University of Queensland field station, off Brisbane)

The four units of study, each worth 6 credit points, are conducted as field schools offered only during the Easter (Semester 1 mid-semester) break and the July mid-year break. Each field school will run for approximately 10 days. Assessment will be based on participation and reports completed during the field school, and an assignment to be completed following the field school. The Coral Reef Ecosystems unit and the Coastal Management unit will be offered each year, together with one of the other two units. Students may enrol in these units in academic year 2 and year 3 as part of the BSc (Marine Science). Students enrolling in these units of study will be selected from the three participating Universities, as well as some overseas Study Abroad students. Preference will however be given to students enrolled in the program at the three participating universities. Owing to the size of facilities and accommodation at the island research stations all units will have a quota with entry based on merit. There are no Advanced versions of these units. For further information on the availability and timing of these units please refer to the website: www.usyd.edu.au/marine.

NTMP 3001 **Coral Reef Ecosystems**
6 credit points. B Sc (Marine Science). **Session:** S2 Intensive. **Classes:** Fieldwork, 80 hours block mode. **Assumed Knowledge:** General concepts in Biology. **Prerequisites:** MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. **Corequisites:** MARS(2006 or 2906). **Assessment:** Report.
NB: Department permission required for enrolment. These units are only available to BSc (Marine Science) students.
Coral Reef Ecosystems is an intensive unit that will be held at either the Heron Island or One Tree Island Tropical Research Stations on the Great Barrier Reef. The unit focuses on the dominant taxa in reef environments ad linkages between them. Emphasis is given to corals, other reef associated invertebrates (eg. echinoderms and plankton) and fishes. Ecological and physiological aspects of key organisms are explored. Aspects covered include: distribution of corals; coral bleaching; coral symbionts and the health of the corals based on photo synthetic activity; predation on corals; the input of plankton to reefs; and, the role of fishes and invertebrates in reef environments.

NTMP 3003 **Fisheries Biology and Management**
6 credit points. B Sc (Marine Science). **Session:** S2 Intensive. **Classes:** Fieldwork, 80 hours block mode. **Assumed Knowledge:** General concepts in Biology. **Prerequisites:** MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. **Corequisites:** MARS(2006 or 2906). **Assessment:** Report.
NB: Department permission required for enrolment. These units are only available to BSc (Marine Science) students.
Fisheries Biology and Management is an intensive unit that will be held at the tropical research station on Orpheus Island in the Great Barrier Reef. The unit focuses on approaches to quantitative fisheries biology in tropical marine environments. Emphasis is given to sampling design and hypothesis testing, underwater visual census surveys, fishery surveys, assessments of habitat types, and tagging and trapping of organisms. Most field aspects will be covered while diving and data storage will be dealt with at the end of each day. The assessment will focus on the manipulation of data and reporting.

NTMP 3004 **Aquaculture**
6 credit points. B Sc (Marine Science). **Session:** S2 Intensive. **Classes:** Fieldwork, 80 hours block mode. **Assumed Knowledge:** General concepts in Biology. **Prerequisites:** MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. **Corequisites:** MARS(2006 or 2906). **Assessment:** Assignments and report.
NB: Department permission required for enrolment. These units are only available to BSc (Marine Science) students.
Aquaculture is an intensive unit that will be held at the tropical research station on Orpheus Island in the Great Barrier Reef. The unit focuses on approaches to aquaculture in tropical marine environments. Emphasis is given to aquaculture of tropical invertebrates (especially bivalves and clams) and fishes. Some aspects of the unit may also be done using the aquarium system on campus at James Cook University. Aspects covered include: the design of aquarium facilities; water quality; rearing of algae; rearing of planktonic food; stocking densities; and, growth and genetics of the target species.

NTMP 3005 **Coastal Management**
6 credit points. B Sc (Marine Science). **Session:** S2 Intensive. **Classes:** Fieldwork, 80 hours block mode. **Assumed Knowledge:** General concepts in Biology. **Prerequisites:** MARS(2005 or 2905) and MARS(2007 or 2907), plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. **Corequisites:** MARS(2006 or 2906). **Assessment:** Assignment and report.
NB: Department permission required for enrolment. These units are only available to BSc (Marine Science) students.
This unit examines the impacts of human activities on coastal and marine environments. It explores the complex relationships among the ecological and social values of these environments and outlines strategies and tools for their management. This is an intensive unit that will be held at the Moreton Bay Research Station.

Mathematics and Statistics

The School of Mathematics and Statistics offers units of study in Applied Mathematics, Mathematical Statistics and Pure Mathematics. The Junior units of study cover a range of topics in mathematics and statistics and are offered at four levels, viz. Introductory, Life Sciences, Normal and Advanced, to suit various levels of previous knowledge.

Intermediate, Senior and Honours units of study are mostly provided within one of the subject areas of Applied Mathematics, Mathematical Statistics and Pure Mathematics.

Applied Mathematics is concerned with the development of mathematical and computing methods and their application in particular contexts which may arise in the natural sciences, engineering, economics or the social sciences. Units of study are designed to give training to students who will specialise in other subjects, and also for training applied mathematicians. While mathematical rigour is not neglected, particular emphasis is given to questions such as the treatment of observational models which are relevant to particular contexts.

Mathematical Statistics is concerned with the theory of probability and the mathematical methods of statistics applied to such problems as statistical inference, the design of experiments and sample surveys, and all problems of data analysis. The major units of study are designed to train those who wish to become professional statisticians, tertiary teachers and research workers, but there are units of study which provide a knowledge of statistical methods and techniques for students specialising in other fields.

Pure Mathematics units of study have two main aims. One of these is to equip students with the background of mathematical knowledge, understanding and skill necessary for units of study in many branches of science. The other is the provision of training in pure mathematics necessary for those who wish to make a career in mathematics. This might be either in teaching or research or in one of the many avenues where highly developed mathematical ability and a thorough knowledge of modern mathematical techniques are required, such as computing, operations research, management, finance and economics.

Website: Further information about all units of study is available at www.maths.usyd.edu.au/Teaching.html

Summer School

This School offers some units of study in The Sydney Summer School (January-February). Consult The Sydney Summer School website for more information: www.summer.usyd.edu.au/

Mathematics Junior units of study

Various combinations of Junior units of study may be taken, subject to the prerequisites listed. Often specific Junior units of study are prerequisites for Mathematics and Statistics units in the Intermediate and Senior years.

Before deciding on a particular combination of Junior units of study, students are advised to check carefully the prerequisites relating to Mathematics for all units of study.

Introductory units of study

Students who have not studied a calculus course at high school may enrol in the Introductory Calculus 6-credit point unit.

MATH 1111 **Introduction to Calculus**

6 credit points. B A, B E, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, 2 tut/week. **Assumed Knowledge:** At least Year 10 Mathematics. **Prohibitions:** MATH1001, MATH1901, MATH1011, MATH1906. **Assessment:** One 2 hr exam, assignments, quizzes.

NB: Students with HSC Mathematics/Extension 1/Extension 2 (or equivalent) are prohibited.

This unit is an introduction to the calculus of one and two variables. Topics covered include elementary functions, differentiation, basic integration techniques and partial derivatives. Applications in science and engineering are emphasised.

Textbooks

Calculus: Single and Multivariable. Hughes-Hallett, Gleason, McCallum, et al. Wiley, (special edition, details to be advised).

Life Sciences units of study

Life Sciences units of study are designed to provide students with an overview of the necessary mathematical and statistical background for studies in the Life Sciences. They are provided for students in the Faculty of Science whose major interest lies outside mathematics. There are more details in the Junior Mathematics Handbook, available from the School at the time of enrolment.

Assumed knowledge

Knowledge equivalent to the HSC 2-unit Mathematics course is assumed. Students who do not have this knowledge are strongly advised to attend a bridging course conducted jointly by the School and the Mathematics Learning Centre in February.

Relation to other units of study and recommendations

The four Life Science units of study together give 12 credit points of mathematics, which is the minimum required by the BSc degree regulations. Students obtaining a Distinction in MATH 1011 are encouraged to enrol in normal units of study in subsequent semesters. Students obtaining a Distinction or better in MATH 1011,1012 or 1013 may proceed to Intermediate units of study in the Mathematics Discipline Area. Students with a Credit or better in MATH 1011 and a Pass or better in MATH 1015 may proceed to Intermediate units of study in the Statistics discipline area. Students with a Pass in only MATH 1015 are limited to the Intermediate Statistics units of study STAT 2011 and STAT 2012.

MATH 1011 **Life Sciences Calculus**

3 credit points. B A, B Agr Ec, B App Sc (Ex, SS and Nut), B App Sc (Ex &Sp Sc), B Sc (Nutr), B Com, B Ed, B Sc (Psych), B Med Sc, B Pharm (Rural), B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG. **Session:** Semester 1, Summer. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics. **Prohibitions:** MATH (1111 or 1001 or 1901 or 1906).. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1011 is designed to provide calculus for students of the life sciences who do not intend to undertake higher year mathematics and statistics.

This unit of study looks at the fitting of data to various functions, introduces finite difference methods, and demonstrates the use of calculus in optimisation problems. It extends differential calculus to functions of two variables and develops integral calculus, including the definite integral and multiple integrals.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1013 **Differential and Difference Equations**

3 credit points. B A, B Agr Ec, B Com, B Ed, B Sc (Psych), B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics or MATH 1111. **Prohibitions:** MATH (1003 or 1903 or 1907).. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH 1013 is designed to provide the theory of difference and differential equations for students of the life sciences who do not intend to undertake higher year mathematics and statistics.

This unit of study looks at the solution of equations by bisection and iteration, first and second order difference equations where chaos is met, and examples of modelling using simple first and second order differential equations.

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1014 **Introduction to Linear Algebra**

3 credit points. B A, B E, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 lee, 1 tut/week. **Assumed Knowledge:** HSC Mathematics or MATH1 111. **Prohibitions:** MATH 1012, MATH 1002, MATH 1902. **Assessment:** One 1.5 hr exam, assignments, quizzes.

This unit is an introduction to Linear Algebra. Topics covered include vectors, systems of linear equations, matrices, eigenvalues and eigenvectors. Applications in life and technological sciences are emphasised.

Textbooks

Linear Algebra: A Modern Introduction, David Poole, Thompson Brook/Cole (Special edition, details to be advised)

MATH 1015 **Life Science Statistics**

3 credit points. B A, B Agr Ec, B App Sc (Ex, SS and Nut), B App Sc (Ex &Sp Sc), B Sc (Nutr), B Com, B Ed, B Sc (Psych), B Med Sc, B Pharm, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter Schoo. **Session:** Semester 1. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics. **Prohibitions:** MATH (1005 or 1905) or STAT (1021 or 1022) or ECMT Junior units of study.. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH1015 is designed to provide a thorough preparation in statistics for students of the Life Sciences.lt offers a comprehensive introduction to data analysis, probability and sampling, 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 & Statistics Normal units of study

Normal units of study are designed for students who have both the necessary background and the interest in mathematics and who need

to study mathematics beyond Junior units of study in order to satisfy their own aspirations or degree requirements.
There are more details of these units of study in the Junior Mathematics Handbook, available from the School at the time of enrolment.
Assumed knowledge
For the units MATH 1001, MATH 1002 and MATH 1004, knowledge equivalent to the HSC Mathematics Extension 1 course is assumed. The assumed knowledge for MATH 1005 is HSC 2-unit Mathematics. For MATH 1003 the assumed knowledge is MATH 1001 or HSC Mathematics Extension 2. Students who have a very good result in the equivalent of the HSC 2-unit course are encouraged to enrol in the Normal units of study but should discuss their plans with a Mathematics adviser.
Relation to other units of study and recommendations
Students should take at least two units of study in each semester in order to meet the minimum requirement of 12 credit points of Mathematics in the BSc award course. The usual enrolment for Normal level students is in the three units MATH 1001, MATH 1002, MATH 1003 and (at least) one of MATH 1004 and MATH 1005. Passes in Junior units of study at this level qualify students to proceed to Intermediate units of study in Mathematics and Statistics. Students should note however that some Intermediate units of study in both Mathematics and Statistics require specific Junior units of study to be passed as prerequisites. Students obtaining a Credit or better in Normal units of study may enrol in other Advanced units of study.

MATH 1001 **Differential Calculus**
3 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 1, Summer. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 1. **Prohibitions:** MATH 1011 or 1901 or 1906 or 1111. **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.
Textbooks
As set out in the Junior Mathematics Handbook.

MATH 1002 **Linear Algebra**
3 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 1, Summer. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 1. **Prohibitions:** MATH 1902 or 1012 or 1014. **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 solutions of linear systems, matrices, determinants, eigenvalues and eigenvectors.
Textbooks
As set out in the Junior Mathematics Handbook

MATH 1003 **Integral Calculus and Modelling**
3 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 2, Summer. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 2 or MATH 1001 or MATH 1111. **Prohibitions:** MATH 1013 or 1903 or 1907. **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.
Textbooks
As set out in the Junior Mathematics Handbook

MATH 1004 **Discrete Mathematics**
3 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 2, Summer. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 1. **Prohibitions:** MATH 1904 or MATH2011. **Assessment:** One 1.5 hour examination, assignments and quizzes.
MATH 1004 is designed to provide a thorough preparation for further study in Mathematics. 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 provides an introduction to fundamental aspects of discrete mathematics, which deals with 'things that come in chunks that can be counted'. It focuses on the enumeration of a set of numbers, viz. Catalan numbers. Topics include sets and functions, counting principles, Boolean expressions, mathematical induction, generating functions and linear recurrence relations, graphs and trees.
Textbooks
As set out in the Junior Mathematics Handbook

MATH 1005 **Statistics**
3 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Med Sc, B Pharm (Rural), B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 2, Summer. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics. **Prohibitions:** MATH (1905 or 1015) or ECMT Junior units of study or STAT (1021 or 1022). **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.
Textbooks
As set out in the Junior Mathematics Handbook

Mathematics & Statistics Junior Advanced units of study
Advanced units of study are designed for students who have a strong background and a keen interest in mathematics and who need to study mathematics at a higher level to satisfy their own aspirations or degree requirements. All students aiming for high achievement, such as an Honours degree or postgraduate study, are advised to enrol in Advanced units of study.
Content
The unit of study content is similar in outline to that of the Normal units of study above but proceeds more deeply and at a faster rate, covers more difficult material and requires more mathematical sophistication.
There are more details of these units of study in the Junior Mathematics Unit of Study Handbook, available from the School at the time of enrolment.
Assumed knowledge
Knowledge equivalent to the HSC Mathematics Extension 2 course is assumed. Students who have a very good result in the equivalent of the HSC Mathematics Extension 1 course may enrol in these units of study but should discuss their plans with a Mathematics adviser.
Relation to other units of study and recommendation
Students should take two units of study in each semester in order to meet the minimum requirement of 12 credit points of Mathematics in the BSc award course. The usual enrolment for Advanced level students is in the units MATH 1901, MATH 1902, MATH 1903 and (at least) one of the units MATH 1904 and MATH 1905. Passes in Junior units of study at this level qualify students to proceed to Intermediate units of study in Mathematics and Statistics at the Advanced level. It should be noted that some Intermediate and Senior units of study in both Mathematics and Statistics require specific Junior units of study as prerequisites.
Students who are awarded at least a Credit grade in this level are encouraged to proceed to Intermediate units of study in Mathematics and Statistics at the Advanced level.

MATH 1901 **Differential Calculus (Advanced)**
3 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 2. **Prohibitions:** MATH (1111 or 1011 or 1001 or 1906). **Assessment:** One 1.5 hour examination, assignments and quizzes.
MATH 1901 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 parallels the normal unit MATH 1001 but goes more deeply into the subject matter and requires more mathematical sophistication.
Textbooks
As set out in the Junior Mathematics Handbook

MATH 1902 **Linear Algebra (Advanced)**
3 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 2. **Prohibitions:** MATH (1002 or 1012 or 1014). **Assessment:** One 1.5 hour examination, assignments and quizzes.
MATH 1902 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 parallels the normal unit MATH 1002 but goes more deeply into the subject matter and requires more mathematical sophistication.
Textbooks
As set out in the Junior Mathematics Handbook

MATH 1903 **Integral Calculus and Modelling Advanced**
3 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 2 or Credit or better in MATH (1001 or 1901). **Prohibitions:** MATH (1003 or 1013 or 1907). **Assessment:** One 1.5 hour examination, assignments and quizzes.
MATH 1903 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 parallels the normal unit MATH 1003 but goes more deeply into the subject matter and requires more mathematical sophisticaton.
Textbooks
As set out in the Junior Mathematics Handbook

MATH 1904 **Discrete Mathematics (Advanced)**
3 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 2. **Prohibitions:** MATH1004 or MATH2011. **Assessment:** One 1.5 hour examination, assignments and quizzes.
MATH 1904 is designed to provide a thorough preparation for further study in mathematics. 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 parallels the normal unit MATH 1004 but goes more deeply into the subject matter and requires more mathematical sophistication.
Textbooks
As set out in the Junior Mathematics Handbook

MATH 1905 **Statistics (Advanced)**
3 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 2. **Prohibitions:** MATH (1005 or 1015) or ECMT Junior units of study or STAT (1021 or 1022). **Assessment:** One 1.5 hour examination, assignments and quizzes.
MATH 1905 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 Advanced level unit of study parallels the normal unit MATH 1005 but goes more deeply into the subject matter and requires more mathematical sophistication.
Textbooks
As set out in the Junior Mathematics Handbook

MATH 1906 **Mathematics (Special Studies Program) A**
3 credit points. B A, B Com, B E, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 lee, 1 sem, 1 tut/wk. **Prerequisites:** UAI of at least 98.5 and result in Band E4 HSC Mathematics Extension 2; by invitation. **Prohibitions:** MATH (1111 or 1001 or 1011 or 1901).. **Assessment:** One 1.5hr exam, assignments, classwork.
NB: Department permission required for enrolment.
This is an Advanced unit of study. Entry to Mathematics (Special Studies Program) A is restricted to students with a UAI of 98.5 and an excellent school record in Mathematics. Students will cover the material in MATH 1901 Differential Calculus (Advanced). In addition there will be a selection of special topics, which are not available elsewhere in the Mathematics and Statistics program.

MATH 1907 **Mathematics (Special Studies Program) B**
3 credit points. B A, B Com, B E, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 lee, 1 sem& 1 tut/wk. **Prerequisites:** Distinction in MATH1906; by invitation. **Prohibitions:** MATH (1003 or 1013 or 1903).. **Assessment:** One 1.5hr exam, assignments, classwork.
NB: Department permission required for enrolment.
This is an Advanced unit of study. Entry to Mathematics (Special Studies Program) B is normally restricted to students with a Distinction in MATH1906. Students will cover the material in MATH1903 Integral Calculus and Modelling (Advanced). In addition there will be a selection of special topics, which are not available elsewhere in the Mathematics and Statistics program.

Mathematics Intermediate units of study
The School of Mathematics provides a range of Intermediate units of study, each worth 6 credit points covering a variety of topics in Pure and Applied Mathematics. A normal Intermediate load in a discipline is 12 credit points and this is the minimum that should be undertaken by anyone intending to specialise in Senior Mathematics. The units of study are taught at either the Normal or the Advanced level. Entry to an Advanced unit of study usually requires a Credit or better in a Normal level prerequisite or a Pass in an Advanced level prerequisite.
For ease of overview the units of study are arranged under Pure, for students wishing to specialise in Pure Mathematics, and Applied, for those wishing to specialise in Applied Mathematics. Several units of study are suitable for either. Details of each unit of study appear below whilst full details of unit of study structure, content and examination procedures are provided in the Second Year Mathematics Handbook available from the School at the time of enrolment.
Pure units of study (each 6 credit points)
- Algebra (Adv) MATH 2968
- Discrete Maths & Graph Theory MATH2069
- Discrete Maths & Graph Theory (Adv) MATH2969
- Linear Mathematics & Vector Calculus MATH2061
- Linear Mathematics & Vector Calculus (Adv) MATH2961
- Number Theory and Cryptography MATH 2068
- Real and Complex Analysis (Adv) MATH 2962

Applied units of study (each 6 credit points)
- Introduction to Partial Differential Equations MATH2065
- Introduction to Partial Differential Equations (Adv) MATH2965
- Linear Mathematics & Vector Calculus MATH2061
- Linear Mathematics & Vector Calculus (Adv) MATH2961
- Mathematical Computing & Nonlinear Systems MATH 2063
- Mathematical Computing & Nonlinear Systems (Adv) MATH 2963
- Optimisation & Financial Mathematics MATH 2070
- Optimisation & Financial Mathematics (Adv) MATH 2970

Relation to other units of study and recommendations
In general, 2 units of study (12 credit points) of Intermediate mathematics are needed to progress to a Senior Mathematics unit of study. If your major interest is in mathematics, then you are strongly encouraged to enrol in at least 3 units of study in Intermediate Mathematics. If you are considering doing Honours in mathematics, they should include some Advanced units of study.
Students intending to specialise in Applied Mathematics are encouraged to include MATH 2061 or 2961, and MATH 2065 or 2965.
Students intending to specialise in Pure Mathematics should include MATH 2061 or 2961. Students considering Honours in Pure Mathematics should also take MATH 2962 and MATH 2968.
Computer Science students may like to include MATH 2069 or 2969 among their choices.
Physics students would be well-advised to choose MATH 2061 or 2961, and MATH 2065 or 2965.
Prospective teachers of mathematics should consider MATH 2061 and 2068.

MATH 2916 **Working Seminar A (SSP)**
3 credit points. B A, B Com, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 1hr seminar/wk. **Prerequisites:** By invitation, High Distinction average over 12 credit points of Advanced Junior Mathematics. **Assessment:** 1 hour presentation, 15-20 page essay.
NB: Department permission required for enrolment.
The main aim of this unit is to develop the students' written and oral presentation skills. The material will consist of a series of connected topics relevant to modern mathematics and statistics. The topics are chosen to suit the students' background and interests, and are not covered by other mathematics or statistics units. The first session will be an introduction on the principles of written and oral presentation of mathematics. Under the supervision and advice of

the lecturer(s) in charge, the students present the topics to the other students and the lecturer in a seminar series and a written essay in a manner that reflects the practice of research in mathematics and statistics.

MATH 2917 **Working Seminar B (SSP)**
3 credit points. B A, B Com, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** lhr seminar/wk. **Prerequisites:** By invitation, High Distinction average over 12 credit points of Advanced Junior Mathematics. **Assessment:** 1 hour presentation, 15-20 page essay.
NB: Department permission required for enrolment.
The main aim of this unit is to develop the students' written and oral presentation skills. The material will consist of a series of connected topics relevant to modern mathematics and statistics. The topics are chosen to suit the students' background and interests, and are not covered by other mathematics or statistics units. The first session will be an introduction on the principles of written and oral presentation of mathematics. Under the supervision and advice of the lecturer(s) in charge, the students present the topics to the other students and the lecturer in a seminar series and a written essay in a manner that reflects the practice of research in mathematics and statistics.

MATH 2061 **Linear Mathematics and Vector Calculus**
6 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Res Ec, B S T, B Sc, UG Study Abroad Program, UG Summer/Winter School. **Session:** Summer, Semester 1. **Classes:** 3 lee, 1 tut and 1 practice class/wk. **Prerequisites:** MATH (1111 or 1001 or 1901 or 1906) and MATH (1014 or 1002 or 1902) and MATH (1003 or 1903 or 1907). **Prohibitions:** MATH (2001 or 2901 or 2002 or 2902 or 2961 or 2067). **Assessment:** 3 hour exam, assignments, quizzes.
This unit starts with an investigation of linearity: linear functions, general principles relating to the solution sets of homogeneous and inhomogeneous linear equations (including differential equations), linear independence and the dimension of a linear space. The study of eigenvalues and eigenvectors, begun in junior level linear algebra, is extended and developed. Linear operators on two-dimensional real space are investigated, paying particular attention to the geometrical significance of eigenvalues and eigenvectors. The unit then moves on to topics from vector calculus, including vector-valued functions (parametrised curves and surfaces; vector fields; div, grad and curl; gradient fields and potential functions), line integrals (arc length; work; path-independent integrals and conservative fields; flux across a curve), iterated integrals (double and triple integrals; polar, cylindrical and spherical coordinates; areas, volumes and mass; Green's Theorem), flux integrals (flow through a surface; flux integrals through a surface defined by a function of two variables, though cylinders, spheres and parametrised surfaces), Gauss' Divergence Theorem and Stokes' Theorem.

MATH 2961 **Linear Mathematics & Vector Calculus Adv**
6 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Sc, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 4 lee & 1 tut/wk. **Prerequisites:** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003). **Prohibitions:** MATH (2001 or 2901 or 2002 or 2902 or 2061 or 2067). **Assessment:** 2 hour exam, assignments.
This unit is an advanced version of MATH2061, with more emphasis on the underlying concepts and on mathematical rigour. Topics from linear algebra focus on the theory of vector spaces and linear transformations.
The connection between matrices and linear transformations is studied in detail. Determinants, introduced in first year, are revised and investigated further, as are eigenvalues and eigenvectors. The calculus component of the unit includes local maxima and minima, Lagrange multipliers, the inverse function theorem and Jacobians. There is an informal treatment of multiple integrals: double integrals, change of variables, triple integrals, line and surface integrals, Green's theorem and Stokes' theorem.

MATH 2962 **Real and Complex Analysis (Advanced)**
6 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Sc, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, 1 tut & 1 practice class/wk. **Prerequisites:** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003). **Prohibitions:** MATH (2007 or 2907). **Assessment:** 2 hour exam, assignments.
Analysis is one of the fundamental topics underlying much of mathematics including differential equations, dynamical systems, differential geometry, topology and Fourier analysis. Starting off with an axiomatic description of the real number system, this first course in analysis concentrates on the limiting behaviour of infinite sequences and series on the real line and the complex plane. These concepts are then applied to sequences and series of functions, looking at point-wise and uniform convergence. Particular attention is given to power series leading into the theory of analytic functions and complex analysis. Topics in complex analysis include elementary functions on the complex plane, the Cauchy integral theorem, Cauchy integral formula, residues and related topics with applications to real integrals.

MATH 2063 **Math Computing and Nonlinear Systems**
6 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, 1 tut, 1 computer lab/week (lectures in common with MATH2963). **Prerequisites:** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907). **Prohibitions:** MATH (2003 or 2903 or 2006 or 2906 or 2963). **Assessment:** 3hr exam, assignments, quizzes.
This unit will introduce students to techniques of mathematical computation as applied to nonlinear systems, using the numerical programming language MATLAB and, where appropriate, computer algebra. This knowledge will be applied to a number of modelling problems, particularly those involving nonlinear mappings and nonlinear ordinary differential equations (ODEs). Throughout the unit of study the essential nonlinear theory will be developed, and the resulting ideas will be explored computationally. This will allow us to explore the modern concepts of chaos using a variety of examples, including the logistic map, the Henon map and the Lorenz equations. No prior knowledge of programming or of the MATLAB language or computer algebra is required.

MATH 2963 **Math Computing & Nonlinear Systems (Adv)**
6 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, 1 tut, 1 computer lab/week (lectures in common with MATH2063). **Prerequisites:** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002) and MATH (1903 or 1907 or Credit in 1003). **Prohibitions:** MATH (2003 or 2903 or 2006 or 2906 or 2063). **Assessment:** 3 hr exam, assignments/quizzes.
The content of this unit of study parallels that of MATH2063, but both computational and theory components will place more emphasis on Advanced topics, including Lyapunov exponents, stability, 2- and 3- cycles for mappings and concepts such as strange attractors. No prior knowledge of programming or of the MATLAB language or computer algebra is required.

MATH 2065 **Partial Differential Equations (Intro)**
6 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Res Ec, B Sc, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee, 1 tut,l example class/week. **Prerequisites:** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907). **Prohibitions:** MATH (2005 or 2905 or 2965 or 2067). **Assessment:** 3 hr exam, mid-semester test, assignments.
This is an introductory course in the analytical solutions of PDEs (partial differential equations) and boundary value problems. The techniques covered include separation of variables, Fourier series, Fourier transforms and Laplace transforms.

MATH 2965 **Partial Differential Equations Intro Adv**
6 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Sc, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee, 1 tut,l computer lab/week (lectures in common with MATH2065). **Prerequisites:** MATH (2961 or Credit in 2061) or {MATH (2901 or Credit in 2001) and MATH (2902 or Credit in 2002)}. **Prohibitions:** MATH (2005 or 2905 or 2065 or 2067). **Assessment:** 3 hr exam, assignments.
This unit of study is essentially an Advanced version of MATH2065, the emphasis being on solutions of differential equations in applied mathematics. The theory of ordinary differential equations is developed for second order linear equations, including series solutions, special functions and Laplace transforms. Some use is made of computer programs such as Mathematica. Methods for PDEs (partial differential equations) and boundary-value problems include separation of variables, Fourier series and Fourier transforms.

MATH 2068 **Number Theory and Cryptography**
6 credit points. B A, B Com, B Ed, B Sc (Psych), B Sc, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee, 1 tut & 1 computer lab/wk. **Prerequisites:** 9 credit points of Junior level Mathematics including MATH (1002 or 1902). **Prohibitions:** MATH (3024 or 3009). **Assessment:** 3 hour exam, assignments, quizzes.
Cryptography is the branch of mathematics that provides the techniques for confidential exchange and authentication of information sent over public networks. This unit introduces tools from elementary number theory, then applies them to the analysis of block ciphers and stream ciphers, as the foundation for modern public key cryptography.

MATH 2968 **Algebra (Advanced)**
6 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Sc, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lec,l tut & 1 practice class/wk. **Prerequisites:** 9 credit points of Junior Mathematics (advanced level or Credit at normal level) including (MATH1902 or Credit in MATH1002). **Prohibitions:** MATH (2908 or 2918 or 2008). **Assessment:** 3 hour exam, assignments.
This unit provides an introduction to modern abstract algebra, via linear algebra and group theory. It starts with a revision of linear algebra concepts from Junior Mathematics and MATH2961, and proceeds with a detailed investigation of inner product spaces over

the real and complex fields. Applications here include least squares lines and curves of best fit, and approximation of continuous functions by finite Fourier series. Further topics in linear algebra covered in this unit include dual space, quotient spaces and (if time permits) possibly tensor products. The second part of the unit is concerned with introductory group theory, motivated by examples of matrix groups and permutation groups. Topics include actions of groups on sets, including linear actions on vector spaces. Subgroups, homomorphisms and quotient groups are investigated, and the First Isomorphism Theorem is proved.

MATH 2069 **Discrete Mathematics and Graph Theory**
6 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Sc, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lec,l tut & 1 practice class/wk. **Prerequisites:** 6 credit points of Junior level Mathematics. **Prohibitions:** MATH (2011 or 2009 or 2969). **Assessment:** Two 1.5 hour exams, assignments, quizzes.
We introduce students to several related areas of discrete mathematics, which serve their interests for further study in pure and applied mathematics, computer science and engineering. Topics to be covered in the first part of the unit include recursion and induction, generating functions and recurrences, combinatorics, including connections with probability theory, asymptotics and analysis of algorithms, set theory and logic. Topics covered in the second part of the unit include Eulerian and Hamiltonian graphs, the theory of trees (used in the study of data structures), planar graphs, the study of chromatic polynomials (important in scheduling problems), maximal flows in networks, matching theory.

MATH 2969 **Discrete Mathematics & Graph Theory Adv**
6 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Sc, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lec,l tut & 1 practice class/wk. **Prerequisites:** 9 credit points of Junior Mathematics (advanced level or Credit at the normal level). **Prohibitions:** MATH (2011 or 2009 or 2069). **Assessment:** Two 1.5 hour exams, assignments, quizzes.
This unit will cover the same material as MATH2069 with some extensions and additional topics.

MATH 2070 **Optimisation and Financial Mathematics**
6 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Res Ec, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee, 1 tut, 1 computer lab. **Assumed Knowledge:** MATH (1003 or 1903 or 1907). **Prerequisites:** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902). **Prohibitions:** MATH (2010 or 2033 or 2933 or 2970), ECMT3510. **Assessment:** 3 hr exam, assignments, quiz, project.
NB: Students may enrol in both MATH2070 and MATH3075 in the same semester
Problems in industry and commerce often involve maximising profits or minimising costs subject to constraints arising from resource limitations. The first part of this unit looks at the important class of linear optimisation programming problems and their solution using the simplex algorithm.
The second part of the unit deals with utility theory and modern portfolio theory. Topics covered include: pricing under the principles of expected return and expected utility; mean-variance Markowitz portfolio theory, the Capital Asset Pricing Model, log-optimal portfolios and the Kely criterion; dynamical programming. Some understanding of probability theory including distributions and expectations is required in this part.
Theory developed in lectures will be complemented by computer laboratory sessions using MATLAB. Minimal computing experience will be required.

MATH 2970 **Optimisation & Financial Mathematics Adv**
6 credit points. B A, B Com, B E, B Ed, B Sc (Psych), B Sc, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee, 1 tut,computer lab (lectures given in common with MATH2070). **Assumed Knowledge:** MATH (1903 or 1907) or Credit in MATH1003. **Prerequisites:** MATH (1901 or 1906 or Credit in 1001) and MATH (1902 or Credit in 1002). **Prohibitions:** MATH (2010 and 2033 and 2933 and 2070). **Assessment:** 3 hr exam, assignments, quizzes.
NB: Students may enrol in both MATH2970 and MATH3975 in the same semester
The content of this unit of study parallels that of MATH2070, but students enrolled at Advanced level will undertake more advanced problem solving and assessment tasks, and some additional topics may be included.

Mathematics Senior units of study
The School of Mathematics and Statistics provides a range of senior units of study in the Science Subject Area MATH. (The separate Science Subject Area STAT is dealt with in the next section.) Each unit of study is worth 6 credit points; students wishing to obtain a major in mathematics must therefore take at least 4 units of senior mathematics, while those wishing to obtain a double major must take 8. To proceed to honours in either Applied Mathematics or Pure Mathematics, students must have a major in mathematics. Honours entry is further restricted to students attaining a sufficiently high average mark in their senior year. Students interested in doing honours should consult the School to find out the precise details, and obtain advice on an appropriate senior year program.
As well as majors in Mathematics and Statistics, the School offers a major in Financial Mathematics and Statistics. The precise requirements for this major can be found in Table 1 (earlier in this Chapter). Alternatively, consult the School directly.
Each unit of study is designated either as "Normal" or "Advanced". Advanced units have more stringent prerequisites than normal units, and are significantly more demanding. Although the precise requirements vary from unit to unit, it is generally inadvisable for a student who has not achieved a Credit average in intermediate level mathematics to attempt an advanced senior mathematics unit.
Semester 1
- MATH3063 Differential Equations and Biomaths
- MATH3065 Logic and Foundations
- MATH3068 Analysis
- MATH3076 Mathematical Computing
- MATH3961 Metric Spaces (Advanced)
- MATH3962 Rings, Fields and Galois Theory (Adv)
- MATH3963 Differential Equations and Biomaths (Adv)
- MATH3974 Fluid Dynamics (Advanced)
- MATH3976 Mathematical Computing (Advanced)

Semester 2
- MATH3061 Geometry and Topology
- MATH3062 Algebra and Number Theory
- MATH3067 Information and Coding Theory
- MATH3075 Financial Mathematics
- MATH3078 PDEs and Waves
- MATH3964 Complex Analysis with Applications (Adv)
- MATH3966 Modules and Group Representations (Adv)
- MATH3968 Differential Geometry (Adv)
- MATH3969 Measure Theory & Fourier Analysis (Adv)
- MATH3975 Financial Mathematics (Advanced)
- MATH3977 Lagrangian & Hamiltonian Dynamics (Adv)
- MATH3978 PDEs and Waves (Advanced)

Relation to other units of study and recommendations
In general, 4 units of study (24 credit points) are required in order to major in Mathematics and a credit average is required to progress to an Honours year. Potential Honours students are strongly encouraged to include one or more Advanced level unit(s) of study and seek advice from a Senior year coodinator.
Particular combinations would be suitable for students with special interests.
Computer Science students: MATH3065, MATH3962, MATH3076/3976, MATH3062, MATH3067, MATH3966, MATH3061, MATH3075/3975.
Engineering (BSc/BE) students: MATH3961, MATH3068, MATH3063/3963, MATH3065, MATH3974, MATH3076/3976, MATH3969, MATH3078/3978, MATH3968, MATH3067, MATH3977, MATH3964, MATH3075/3975.
Physics or Chemistry students: MATH3061/3961, MATH3068, MATH3962, MATH3063/3963, MATH3065, MATH3974, MATH3076/3976, MATH3969, MATH3966, MATH3968, MATH3078/3978, MATH3964, MATH3977, 3075/3975, MATH3067.
Prospective teachers of Mathematics: MATH3065, MATH3068, MATH3063/3963, MATH3962, MATH3961, MATH3076/3976, MATH3067, MATH3062, MATH3061, MATH3078/3978..

MATH 3061 **Geometry and Topology**
6 credit points. B A, B Com, B IT (Hons), B Res Ec, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee, 1 tut per week. **Prerequisites:** 12 credit points of Intermediate Mathematics. **Prohibitions:** MATH3001, MATH3006. **Assessment:** One 2hr exam, tutorial tests, assignments.
The aim of the unit is to expand visual/geometric ways of thinking. The geometry section is concerned mainly with transformations of the Euclidean plane (that is, bijections from the plane to itself), with a focus on the study of isometries (proving the classification theorem for transformations which preserve distances between points), symmetries (including the classification of frieze groups) and affine transformations (transformations which map lines to lines). The basic approach is via vectors and matrices, emphasizing the interplay between geometry and linear algebra. The study of affine transformations is then extended to the study of collineations in the real projective plane, including collineations which map conies to conies. The topology section considers graphs, surfaces and knots from a combinatorial point of view. Key ideas such as homeomorphism, subdivision, cutting and pasting and the Euler invariant are introduced first for graphs (1-dimensional objects) and then for triangulated

surfaces (2-dimensional objects). The classification of surfaces is given in several equivalent forms. The problem of colouring maps on surfaces is interpreted via graphs. The main geometric fact about knots is that every knot bounds a surface in 3-space. This is proven by a simple direct construction, and this fact is used to show that every knot is a sum of prime knots.

MATH 3961 **Metric Spaces (Advanced)**

6 credit points. B A, B Com, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3hr lee, lhrtut/wk. **Assumed Knowledge:** MATH2961 or MATH2962. **Prerequisites:** 12 credit points of Intermediate Mathematics units. **Prohibitions:** MATH3901, MATH3001. **Assessment:** 2 hour exam, assignments, quizzes.

Topology, developed at the end of the 19th Century to investigate the subtle interaction of analysis and geometry, is now one of the basic disciplines of mathematics. A working knowledge of the language and concepts of topology is essential in fields as diverse as algebraic number theory and non-linear analysis. This unit develops the basic ideas of topology using the example of metric spaces to illustrate and motivate the general theory. Topics covered include: Metric spaces, convergence, completeness and the contraction mapping theorem; Metric topology, open and closed subsets; Topological spaces, subspaces, product spaces; Continuous mappings and homeomorphisms; Compact spaces; Connected spaces; Hausdorff spaces and normal spaces, Applications include the implicit function theorem, chaotic dynamical systems and an introduction to Hilbert spaces and abstract Fourier series.

MATH 3062 **Algebra and Number Theory**

6 credit points. B A, B Com, B IT (Hons), B Res Ec, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee, 1 tut/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics. **Prohibitions:** MATH3962, MATH3902, MATH3002, MATH3009. **Assessment:** One 2hr exam, quizzes and assignments.

NB: Students are advised to take MATH(2068 or 2968) before attempting this unit.

The first half of the unit continues the study of elementary number theory, with an emphasis on the solution of Diophantine equations (for example, finding all integer squares which are one more than twice a square). Topics include the Law of Quadratic Reciprocity, representing an integer as the sum of two squares, and continued fractions. The second half of the unit introduces the abstract algebraic concepts which arise naturally in this context: rings, fields, irreducibles, and unique factorization. Polynomial rings, algebraic numbers, and constructible numbers are also discussed.

Textbooks

R.F.C. Walters, 'Number Theory: an Introduction', Carslaw Publications.
I. Niven, H.S. Zuckerman, H.L. Montgomery, An Introduction to the Theory of Numbers', Wiley.
I.N. Herstein, 'Topics in Algebra', Blaisdell.
L.N. Childs, A Concrete Introduction to Higher Algebra', Springer.

MATH 3962 **Rings, Fields and Galois Theory (Adv)**

6 credit points. B A, B Com, B I T (Hons), B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lectures, 1 tutorial/wk. **Assumed Knowledge:** MATH2961. **Prerequisites:** 12 credit points of Intermediate Mathematics. **Prohibitions:** MATH3062, MATH3902, MATH3002. **Assessment:** One 2hr exam, assignments and quizzes.

NB: Students are advised to take MATH2968 before attempting this unit.

This unit of study investigates the modern mathematical theory that was originally developed for the purpose of studying polynomial equations. The philosophy is that it should be possible to factorize any polynomial into a product of linear factors by working over a "large enough" field (such as the field of all complex numbers). Viewed like this, the problem of solving polynomial equations leads naturally to the problem of understanding extensions of fields. This in turn leads into the area of mathematics known as Galois theory. The basic theoretical tool needed for this program is the concept of a ring, which generalizes the concept of a field. The course begins with examples of rings, and associated concepts such as subrings, ring homomorphisms, ideals and quotient rings. These tools are then applied to study quotient rings of polynomial rings. The final part of the course deals with the basics of Galois theory, which gives a way of understanding field extensions.

Textbooks

I.H. Herstein, Abstract algebra, second edition, MacMillian, 1990.
S. Lang Algebra, third edition, Springer-Verlag, Graduate texts in Mathematics, 2002.
I.N. Stewart, Galois Theory, Chapman and Hall, 1973.

MATH 3063 **Differential Equations & Biomaths**

6 credit points. B A, B Com, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, lhr tut/wk. **Assumed Knowledge:** MATH2061. **Prerequisites:** 12 credit points of Intermediate Mathematics. **Prohibitions:** MATH3020, MATH3920, MATH3003, MATH3923, MATH3963. **Assessment:** 2 hour exam, assignments, quizzes.

This unit of study is an introduction to the theory of systems of ordinary differential equations. Such systems model many types of phenomena in engineering, biology and the physical sciences. The emphasis will not be on finding explicit solutions, but instead on the qualitative features of these systems, such as stability, instability and oscillatory behaviour. The aim is to develop a good geometrical intuition into the behaviour of solutions to such systems. Some background in linear algebra, and familiarity with concepts such as limits and continuity, will be assumed. The applications in this unit will be drawn from predator-prey systems, transmission of diseases, chemical reactions, beating of the heart and other equations and systems from mathematical biology.

MATH 3963 **Differential Equations & Biomaths (Adv)**

6 credit points. B A, B Com, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, lhr tut/wk. **Assumed Knowledge:** MATH2961. **Prerequisites:** 12 credit points of Intermediate Mathematics. **Prohibitions:** MATH3020, MATH3920, MATH3003, MATH3923, MATH3063. **Assessment:** One 2hr exam, assignments, quizzes.

The theory of ordinary differential equations is a classical topic going back to Newton and Leibniz. It comprises a vast number of ideas and methods of different nature. The theory has many applications and stimulates new developments in almost all areas of mathematics. The applications in this unit will be drawn from predator-prey systems, transmission of diseases, chemical reactions, beating of the heart and other equations and systems from mathematical biology. The emphasis is on qualitative analysis including phase-plane methods, bifurcation theory and the study of limit cycles. The more theoretical part includes existence and uniqueness theorems, stability analysis, linearisation, and hyperbolic critical points, and omega limit sets.

MATH 3964 **Complex Analysis with Applications (Adv)**

6 credit points. B A, B Com, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee, lhr tut/wk. **Assumed Knowledge:** MATH2962. **Prerequisites:** 12 credit points of Intermediate Mathematics. **Prohibitions:** MATH3904, MATH3915. **Assessment:** One 2hr exam, assignments and quizzes.

This unit continues the study of functions of a complex variable and their applications introduced in the second year unit Real and Complex Analysis (MATH2962). It is aimed at highlighting certain topics from analytic function theory and the analytic theory of differential equations that have intrinsic beauty and wide applications. This part of the analysis of functions of a complex variable will form a very important background for students in applied and pure mathematics, physics, chemistry and engineering.

The course will begin with a revision of properties of holomorphic functions and Cauchy theorem with added topics not covered in the second year course. This will be followed by meromorphic functions, entire functions, harmonic functions, elliptic functions, elliptic integrals, analytic differential equations, hypergeometric functions. The rest of the course will consist of selected topics from Greens functions, complex differential forms and Riemann surfaces.

MATH 3065 **Logic and Foundations**

6 credit points. B A, B Com, B IT (Hons), B Res Ec, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, lhr tut/wk. **Prerequisites:** 6 credit points of Intermediate Mathematics. **Prohibitions:** MATH3005. **Assessment:** One 2hr exam, tutorial tests, assignments.

This unit is in two halves. The first half provides a working knowledge of the propositional and predicate calculi, discussing techniques of proof, consistency, models and completeness. The second half discusses notions of computability by means of Turing machines (simple abstract computers). (No knowledge of computer programming is assumed.) It is shown that there are some mathematical tasks (such as the halting problem) that cannot be carried out by any Turing machine. Results are applied to first-order Peano arithmetic, culminating in Gbdel's Incompleteness Theorem: any statement that includes first-order Peano arithmetic contains true statements that cannot be proved in the system. A brief discussion is given of Zermelo-Fraenkel set theory (a candidate for the foundations of mathematics), which still succumbs to Gbdel's Theorem.

MATH 3966 **Modules and Group Representations (Adv)**

6 credit points. B A, B Com, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3hr lee, lhr tut/wk. **Assumed Knowledge:** MATH3962. **Prerequisites:** 12 credit points of Intermediate Mathematics. **Prohibitions:** MATH3906, MATH3907. **Assessment:** One 2hr exam, assignments and quizzes.

This unit deals first with generalized linear algebra, in which the field of scalars is replaced by an integral domain. In particular we investigate the structure of modules, which are the analogues of vector spaces in this setting, and which are of fundamental importance in modern pure mathematics. Applications of the theory include the solution over the integers of simultaneous equations with integer coefficients and analysis of the structure of finite abelian groups.

In the second half of this unit we focus on linear representations of groups. A group occurs naturally in many contexts as a symmetry group of a set or space. Representation theory provides techniques for analysing these symmetries. The component will deals with the decomposition of representation into simple constituents, the remarkable theory of characters, and orthogonality relations which these characters satisfy.

MATH 3067 **Information and Coding Theory**

6 credit points. B A, B Com, B IT (Hons), B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3hr lee, lhr tut/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics. **Prohibitions:** MATH3007, MATH3010. **Assessment:** One 2hr exam, tutorial tests, assignments.

The related theories of information and coding provide the basis for reliable and efficient storage and transmission of digital data, including techniques for data compression, digital broadcasting and broadband internet connectivity. The first part of this unit is a general introduction to the ideas and applications of information theory, where the basic concept is that of entropy. This gives a theoretical measure of how much data can be compressed for storage or transmission. Information theory also addresses the important practical problem of making data immune to partial loss caused by transmission noise or physical damage to storage media. This leads to the second part of the unit, which deals with the theory of error-correcting codes. We develop the algebra behind the theory of linear and cyclic codes used in modern digital communication systems such as compact disk players and digital television.

MATH 3068 **Analysis**

6 credit points. B A, B Com, B Res Ec, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3hr lee, lhr tut/wk. **Prerequisites:** 12cp of Intermediate Mathematics. **Prohibitions:** MATH3008, MATH2007, MATH2907, MATH2962. **Assessment:** One 2hr exam, tutorial tests, assignments.

Analysis grew out of calculus, which leads to the study of limits of functions, sequences and series. The aim of the unit is to present enduring beautiful and practical results that continue to justify and inspire the study of analysis. The unit starts with the foundations of calculus and the real number system. It goes on to study the limiting behaviour of sequences and series of real and complex numbers. This leads naturally to the study of functions defined as limits and to the notion of uniform convergence. Returning to the beginnings of calculus and power series expansions leads to complex variable theory: analytic functions, Taylor expansions and the Cauchy Integral Theorem.

Power series are not adequate to solve the problem of representing periodic phenomena such as wave motion. This requires Fourier theory, the expansion of functions as sums of sines and cosines. This unit deals with this theory, Parseval's identity, pointwise convergence theorems and applications.

The unit goes on to introduce Bernoulli numbers, Bernoulli polynomials, the Euler MacLaurin formula and applications, the gamma function and the Riemann zeta function. Lastly we return to the foundations of analysis, and study limits from the point of view of topology.

MATH 3968 **Differential Geometry (Advanced)**

6 credit points. B A, B Com, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3hr lee, 1 tut/wk. **Assumed Knowledge:** At least 6 credit points of Advanced Mathematics units of study at Intermediate or Senior level. **Prerequisites:** 12 credit points of Intermediate Mathematics, including MATH2961. **Prohibitions:** MATH3903. **Assessment:** One 2hr exam and 2 assignments.

This unit is an introduction to Differential Geometry, using ideas from calculus of several variables to develop the mathematical theory of geometrical objects such as curves, surfaces and their higher-dimensional analogues. Differential geometry also plays an important part in both classical and modern theoretical physics. The initial aim is to develop geometrical ideas such as curvature in the context of curves and surfaces in space, leading to the famous Gauss-Bonnet formula relating the curvature and topology of a surface. A second aim is to present the calculus of differential forms as the natural setting for the key ideas of vector calculus, along with some applications.

MATH 3969 **Measure Theory & Fourier Analysis (Adv)**

6 credit points. B A, B Com, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3hr lee, lhr tut/wk. **Assumed Knowledge:** At least 6 credit points of Advanced Mathematics units of study at Intermediate or Senior level. **Prerequisites:** 12 credit points Intermediate Mathematics. **Prohibitions:** MATH3909. **Assessment:** One 2 hour exam, assignments, quizzes.

Measure theory is the study of such fundamental ideas as length, area, volume, arc length and surface area. It is the basis for the integration theory used in advanced mathematics since it was developed by Henri Lebesgue in about 1900. Moreover, it is the basis for modern probability theory. The course starts by setting up measure theory and integration, establishing important results such as Fubini's Theorem and the Dominated Convergence Theorem which allow us to manipulate integrals. This is then applied to Fourier Analysis, and results such as the Inversion Formula and Plancherel's Theorem are derived. Probability Theory is then discussed, with topics including independence, conditional probabilities, and the Law of Large Numbers.

MATH 3974 **Fluid Dynamics (Advanced)**

6 credit points. B A, B Com, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3hr lee, lhr tut/wk. **Assumed Knowledge:** MATH2961, MATH2965. **Prerequisites:** 12 creditpoints of Intermediate Mathematics with average grade of at least Credit. **Prohibitions:** MATH3914. **Assessment:** One 2hr exam.

This unit of study provides an introduction to fluid dynamics, starting with a description of the governing equations and the simplifications gained by using stream functions or potentials. It develops elementary theorems and tools, including Bernoulli's equation, the role of vorticity, the vorticity equation, Kelvin's circulation theorem, Helmholtz's theorem, and an introduction to the use of tensors. Topics covered include viscous flows, lubrication theory, boundary layers, potential theory, and complex variable methods for 2-D airfoils. The unit concludes with an introduction to hydrodynamic stability theory and the transition to turbulent flow.

MATH 3075 **Financial Mathematics**

6 credit points. B A, B Com, B Res Ec, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3hr lee, lhr tut/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics. **Prohibitions:** MATH3975, MATH 3015, MATH3933. **Assessment:** Two class Quizzes and One 2 hr exam.

This unit is an introduction to the mathematical theory of modern finance. Topics include: notion of arbitrage, pricing riskless securities, risky securities, utility theory, fundamental theorems of asset pricing, complete markets, introduction to options, binomial option pricing model, discrete random walks, Brownian motion, derivation of the Black-Scholes option pricing model, extensions and introduction to pricing exotic options, credit derivatives. A strong background in mathematical statistics and partial differential equations is an advantage, but is not essential. Students completing this unit have been highly sought by
the finance industry, which continues to need graduates with quantitative skills. The lectures in the Normal unit are held concurrently with those of the corresponding Advanced unit.

MATH 3975 **Financial Mathematics (Advanced)**

6 credit points. B A, B Com, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3hr lee, lhr tut/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics with at least Credit average. **Prohibitions:** MATH3933, MATH3015, MATH3075. **Assessment:** Two class Quizzes and One 2hr exam.

This unit is an introduction to the mathematical theory of modern finance. Topics include: notion of arbitrage, pricing riskless securities, risky securities, utility theory, fundamental theorems of asset pricing, complete markets, introduction to options, binomial option pricing model, discrete random walks, Brownian motion, derivation of the Black-Scholes option pricing model, extensions and introduction to pricing exotic options, credit derivatives. A strong background in mathematical statistics and partial differential equations is an advantage, but is not essential. Students completing this unit have been highly sought by
the finance industry, which continues to need graduates with quantitative skills. Students enrolled in this unit at the Advanced level will be expected to undertake more challenging assessment tasks. The lectures in the Advanced unit are held concurrently with those of the corresponding Normal unit.

MATH 3076 **Mathematical Computing**

6 credit points. B A, B Com, B IT (Hons), B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr D J Ivers. **Session:** Semester 1. **Classes:** 3hr lee, lhrlab/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics and one of MATH(1001 or 1003 or 1901 or 1903 or 1906 or 1907). **Prohibitions:** MATH 3976, MATH3016, MATH3916. **Assessment:** One 2 hr exam, assignments, quizzes.

This unit of study provides an introduction to Fortran 95 programming and numerical methods. Topics covered include computer arithmetic and computational errors, systems of linear equations, interpolation and approximation, solution of nonlinear equations, quadrature, initial value problems for ordinary differential equations and boundary value problems.

MATH 3976 **Mathematical Computing (Advanced)**
6 credit points. B A, B Com, B IT (Hons), B Sc, B Sc (Bioinformatics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr D J Ivers. **Session:** Semester 1. **Classes:** 3hr lee, lhr lab/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics and one of MATHQ903 or 1907) or Credit in MATH 1003. **Prohibitions:** MATH 3076, MATH 3016, MATH3916. **Assessment:** One 2 hr exam, assignments, quizzes.
See entry for MATH3076 Mathematical Computing.

MATH 3977 **Lagrangian & Hamiltonian Dynamics (Adv)**
6 credit points. B A, B Com, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr. Leon Poladian. **Session:** Semester 2. **Classes:** 3hr lee, lhr tut/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics with at least Credit average. **Prohibitions:** MATH2904, MATH2004, MATH3917. **Assessment:** One 2 hr exam and assignments.
This unit provides a comprehensive treatment of dynamical systems using the mathematically sophisticated framework of Lagrange and Hamilton. This formulation of classical mechanics generalizes elegantly to modern theories of relativity and quantum mechanics.
The unit develops dynamical theory from the Principle of Least Action using the calculus of variations. Emphasis is placed on the relation between the symmetry and invariance properties of the Lagrangian and Hamiltonian functions and conservation laws. Coordinate and canonical transformations are introduced to make apparently complicated dynamical problems appear very simple. The unit will also explore connections between geometry and different physical theories beyond classical mechanics.
Students will be expected to solve fully dynamical systems of some complexity including planetary motion and to investigate stability using perturbation analysis. Hamilton-Jacobi theory will be used to elegantly solve problems ranging from geodesies (shortest path between two points) on curved surfaces to relativistic motion in the vicinity of black holes.
This unit is a useful preparation for units in dynamical systems and chaos, and complements units in differential equations, quantum theory and general relativity.

MATH 3078 **PDEs and Waves**
6 credit points. B A, B Com, B Res Ec, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3hr lee, lhr tut/wk. **Assumed Knowledge:** MATH(2061/2961) and MATH(2065/2965). **Prerequisites:** 12 credit points of Intermediate Mathematics. **Prohibitions:** MATH3978, MATH3018, MATH3921. **Assessment:** One 2 hour exam, one lecture quiz.
This unit of study introduces Sturm-Liouville eigenvalue problems and their role in finding solutions to boundary value problems. Analytical solutions of linear PDEs are found using separation of variables and integral transform methods. Three of the most important equations of mathematical physics - the wave equation, the diffusion (heat) equation and Laplace's equation - are treated, together with a range of applications. There is particular emphasis on wave phenomena, with an introduction to the theory of sound waves and water waves.
Textbooks
D L Powers. Boundary Value Problems. Harcourt-Brace 4th Edition. 1999.

MATH 3978 **PDEs and Waves (Advanced)**
6 credit points. B A, B Com, B Sc, B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3hr lee, lhr tutl/wk. **Assumed Knowledge:** MATH(2061/2961) and MATH(2065/2965). **Prerequisites:** 12 credit points of Intermediate Mathematics with at least Credit average. **Prohibitions:** MATH3078, MATH3018, MATH3921. **Assessment:** One 2 hour exam, one lecture quiz.
As for MATH3078 PDEs & Waves but with more advanced problem solving and assessment tasks. Some additional topics may be included.
Textbooks
D L Powers. Boundary Value Problems. Harcourt-Brace 4th Edition. 1999.

Statistics Intermediate units of study
The School of Mathematics and Statistics provides Intermediate units of study, each worth 6 credit points, in Statistics. A normal Intermediate load in a discipline is 12 credit points and students intending to specialise in Senior Statistics should take 2 units of study (12 credit points) of Intermediate Statistics.
Topics are offered at Normal and Advanced levels and may not be counted together.
The units of study (each 6 credit points) are listed below:
February Semester
- Statistical Models STAT 2011
- Probability and Statistical Models (Adv) STAT 2911
July Semester
- Statistical Tests STAT 2012
- Statistical Tests (Advanced) STAT 2912

Further information follows, whilst details of units of study structure, content and assessment procedures are provided in the Intermediate Year Unit of Study Handbook available from the School at the time of enrolment.

Relation to other units of study and recommendations
Students should note that all Senior Statistics units of study have statistics prerequisites and some require MATH 1003 or 1903 or MATH 1002 or 1902. MATH 2061 or MATH 2961 is also desirable.
If your major interest is statistics, then you are encouraged to enrol in 2 units of study (12 credit points) in Intermediate Statistics. If you are considering doing Honours in Statistics, these units of study should be the Advanced units of study, and choices from Intermediate Mathematics should include at least MATH 2061 or 2961.
If you do not intend to major in Statistics but want a solid introduction to Applied Statistics, you should take STAT 2012 in your second semester.

STAT 2011 **Statistical Models**
6 credit points. B A, B Com, B Res Ec, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, 1 tut, 1 computer lab/wk. **Prerequisites:** MATH (1001 or 1901 or 1906 or 1011) and [MATH (1005 or 1905 or 1015) or STAT1021]. **Prohibitions:** STAT (2901 or 2001 or 2911). **Assessment:** 3 hr exam, assignments, quizzes, computer practical reports, one lhr computer practical class assessment task.
This unit provides an introduction to univariate techniques in data analysis and the most common statistical distributions that are used to model patterns of variability. Common discrete random models like the binomial, Poisson and geometric and continuous models including the normal and exponential will be studied. The method of moments and maximum likelihood techniques for fitting statistical distributions to data will be explored. The unit will have weekly computer classes where candidates will learn to use a statistical computing package to perform simulations and carry out computer intensive estimation techniques like the bootstrap method.

STAT 2012 **Statistical Tests**
6 credit points. B A, B App Sc (Ex, SS and Nut), B App Sc (Ex &Sp Sc), B Sc (Nutr), B Com, B E, B Res Ec, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee, 1 tut, 1 computer lab per wk. **Assumed Knowledge:** STAT (2011 or 2002). **Prerequisites:** MATH (1005 or 1905 or 1015). **Prohibitions:** STAT (2004 or 2912). **Assessment:** 3 hr exam, assignments, quizzes, computer practical reports, one lhr computer practical class assessment task.
This unit provides an introduction to the standard methods of statistical analysis of data: Tests of hypotheses and confidence intervals, including t-tests, analysis of variance, regression - least squares and robust methods, power of tests, non-parametric tests, non-parametric smoothing, tests for count data, goodness of fit, contingency tables. Graphical methods and diagnostic methods are used throughout with all analyses discussed in the context of computation with real data using an interactive statistical package.

STAT 2911 **Probability and Statistical Models (Adv)**
6 credit points. B A, B Com, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, 1 tut, 1 computer lab/wk. **Prerequisites:** MATH (1903 or 1907 or Credit in 1003) and MATH (1905 or Credit in 1005). **Prohibitions:** STAT (2001 or 2011 or 2901). **Assessment:** 3 hr exam, assignments, quizzes, computer practical reports, one lhr computer practical class assessment task.
This unit is essentially an advanced version of STAT2011, with an emphasis being on the mathematical techniques used to manipulate random variables and probability models. Common random variables including the Poisson, normal, beta and gamma families are introduced. Probability generating functions and convolution methods are used to understand the behaviour of sums of random variables. The method of moments and maximum likelihood techniques for fitting statistical distributions to data will be explored. The unit will have weekly computer classes where candidates will learn to use a statistical computing package to perform simulations and carry out computer intensive estimation techniques like the bootstrap method.

STAT 2912 **Statistical Tests (Advanced)**
6 credit points. B A, B Com, B E, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee, 1 tut, 1 computer lab/wk. **Assumed Knowledge:** STAT (2911 or 2901). **Prerequisites:** MATH1905 or Credit in MATH1005. **Prohibitions:** STAT (2004 or 2012). **Assessment:** 3 hr exam, assignments, quizzes, computer practical reports, one lhr computer practical class assessment task.
This unit is essentially an advanced version of STAT2012 with an emphasis on both methods and the mathematical derivation of these methods: Tests of hypotheses and confidence intervals, including t-tests, analysis of variance, regression - least squares and robust methods, power of tests, non-parametric methods, non-parametric smoothing, tests for count data, goodness of fit, contingency tables. Graphical methods and diagnostic methods are used throughout with all analyses discussed in the context of computation with real data using an interactive statistical package.

Statistics Senior units of study

The School of Mathematics and Statistics provides several Senior units of study, each worth 6 credit points, in Statistics. Students wishing to major in Statistics should take 4 units of study (24 credit points) of Senior Statistics.

Some topics are offered at Normal and Advanced levels and may not be counted together. Entry to some Advanced units of study requires a Credit or better in a Normal level prerequisite or a Pass or better in an Advanced level prerequisite.

The units of study (each 6 credit points) are listed below:

First Semester

- STAT3011 Stochastic Processes and Time Series
- STAT3911 Stochastic Processes and Time Series Adv
- STAT3012 Applied Linear Methods
- STAT3912 Applied Linear Methods Advanced

Second Semester

- STAT3013 Statistical Inference
- STAT3913 Statistical Inference Advanced
- STAT3014 Applied Statistics
- STAT3914 Applied Statistics Advanced

Further information follows, whilst details of unit of study structure, content, and assessment procedures are provided in the Senior Units of Study Handbook available from the School at the time of enrolment.

Relation to other units of study and recommendations

In general 4 units of study (24 credit points) are required in order to major in Statistics, and a Credit average is required to progress to an Honours year. Potential Honours students are expected to include at least two Advanced level units of study.

Students intending to major in Statistics should choose 2 units of study of Senior Statistics each semester, making 24 credit points in total.

STAT 3011 **Stochastic Processes and Time Series**

6 credit points. B A, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, 1 tut/wk, 10 computer labs /semester. **Prerequisites:** STAT (2011 or 2911 or 2001 or 2901) and MATH (1003 or 1903 or 1907). **Prohibitions:** STAT3911, STAT3003, STAT3903, STAT3005, STAT3905.. **Assessment:** One 3hr exam, assignments / quizzes, computer practical reports.

Section I of this course will introduce the fundamental concepts of applied stochastic processes and Markov chains used in financial mathematics, mathematical statistics, applied mathematics and physics. Section II of the course establishes some methods of modeling and analysing situations which depend on time. Fitting ARMA models for certain time series are considered from both theoretical and practical points of view. Throughout the course we will use the S-PLUS (or R) statistical packages to give analyses and graphical displays.

STAT 3911 **Stochastic Processes and Time Series Adv**

6 credit points. B A, B Med Sc, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, 1 tut/wk plus an extra lecture on advanced material in the first half of the semester. 7 computer labs (on time series) in the second half of the semester. **Prerequisites:** (STAT2911 or credit in STAT2011) and MATH(1003 or 1903 or 1907). **Prohibitions:** STAT3011, STAT3003, STAT3903, STAT3005, STAT3905.. **Assessment:** One 3hr exam, assignments / quizzes, computer practical reports.

This is an Advanced version of STAT3011. There will be 3 lectures in common with STAT3011. In addition to STAT3011 material, theory on branching processes and birth and death processes will be covered. There will be more advanced tutorial and assessment work associated with this unit.

STAT 3012 **Applied Linear Methods**

6 credit points. B A, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, 1 tut & 1 computer lab/wk. **Prerequisites:** STAT(2012 or 2912 or 2004) and MATH(1002 or 1902). **Prohibitions:** STAT3912, STAT3002, STAT3902, STAT3004, STAT3904. **Assessment:** One 3hr exam, assignments / quizzes, computer practical reports, one 1hr computer practical class assessment task.

This course will introduce the fundamental concepts of analysis of data from both observational studies and experimental designs using classical linear methods, together with concepts of collection of data and design of experiments. First we will consider linear models and regression methods with diagnostics for checking appropriateness of models. We will look briefly at robust regression methods here. Then we will consider the design and analysis of experiments considering notions of replication, randomization and ideas of factorial designs. Throughout the course we will use the S-PLUS (or R) statistical packages to give analyses and graphical displays.

STAT 3912 **Applied Linear Methods Advanced**

6 credit points. B A, B Med Sc, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 3 lee, 1 tut, 1 computer lab/wk. **Prerequisites:** (STAT2912 or Credit in STAT2004 or Credit in STAT2012) and MATH(2061 or 2961 or 1902). **Prohibitions:** STAT3012, STAT3002, STAT3902, STAT3004, STAT3904.. **Assessment:** One 3hr exam, assignments / quizzes, computer practical reports, one 1hr computer practical class assessment task.

This unit is essentially an Advanced version of STAT3012, with emphasis on the mathematical techniques underlying applied linear models together with proofs of distribution theory based on vector space methods. There will be 3 lectures per week in common with STAT3012 and some advanced material given in a separate advanced tutorial together with more advanced assessment work.

STAT 3013 **Statistical Inference**

6 credit points. B A, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee, 1 tut, 1 computer lab /wk. **Prerequisites:** STAT(2012 or 2912 or 2003 or 2903). **Prohibitions:** STAT3913, STAT3001, STAT390L. **Assessment:** One 3hr exam, assignments / quizzes, computer practical reports, one 1hr computer practical class assessment task.

In this course we will study basic topics in modern statistical inference. This will include traditional concepts of mathematical statistics: likelihood estimation, method of moments, properties of estimators, exponential families, decision-theory approach to hypothesis testing, likelihood ratio test as well as more recent approaches such as Bayes estimation, Empirical Bayes and nonparametric estimation. During the weekly computer classes (using S-PLUS or R software packages) we will illustrate the various estimation techniques and give an introduction to computationally intensive methods like Monte Carlo, Gibbs sampling and EM-algorithm.

STAT 3913 **Statistical Inference Advanced**

6 credit points. B A, B Med Sc, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee, 1 tut, 1 computer lab/wk. **Prerequisites:** STAT(2912 or 2903). **Prohibitions:** STAT3013, STAT3001, STAT390L. **Assessment:** One 3hr exam, assignments / quizzes, computer practical reports, one 1hr computer practical class assessment task.

This unit is essentially an Advanced version of STAT3013, with emphasis on the mathematical techniques underlying statistical inference together with proofs based on distribution theory. There will be 3 lectures per week in common with some material required only in this advanced course and some advanced material given in a separate advanced tutorial together with more advanced assessment work.

STAT 3014 **Applied Statistics**

6 credit points. B A, B Med Sc, B Res Ec, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lectures, 1 tutorial, 1 computer lab/wk. **Assumed Knowledge:** STAT(3012 or 3912). **Prerequisites:** STAT(2012 or 2912 or 2004). **Prohibitions:** STAT3914, STAT3002, STAT3902, STAT3006. **Assessment:** One 3hr exam, assignments / quizzes, computer practical reports, one 1hr computer practical assessment task.

This unit has three distinct but related components: Multivariate analysis; sampling and surveys; and generalized linear models. The first component deals with multivariate data covering simple data reduction techniques like principal components analysis and core multivariate tests including Hotelling's T^A2, Mahalanobis' distance and Multivariate Analysis of Variance (MANOVA). The sampling section includes sampling without replacement, stratified sampling, ratio estimation, and cluster sampling. The final section looks at the analysis of categorical data via generalized linear models. Logistic regression and log-linear models will be looked at in some detail along with special techniques for analyzing discrete data with special structure.

STAT 3914 **Applied Statistics Advanced**

6 credit points. B A, B Med Sc, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lectures and 1 computer lab/wk plus an extra hour each week which will alternate between lectures and tutorials. **Assumed Knowledge:** STAT3912. **Prerequisites:** STAT2912 or credit or better in (STAT2004 or STAT2012). **Prohibitions:** STAT3014, STAT3002, STAT3902, STAT3006, STAT3907.. **Assessment:** One 3 hr exam, quizzes, computer practical reports, one 1 hr computer practical assessment task.

This unit is an Advanced version of STAT3014. There will be 3 lectures per week in common with STAT3014. The unit will have extra lectures focusing on multivariate distribution theory developing results for the multivariate normal, partial correlation, the Wishart distribution and Hotellling's T^A2. There will also be more advanced tutorial and assessment work associated with this unit.

Mathematics & **Statistics Honours**

The School of Mathematics and Statistics offers three Honours programs for students who have completed at least 24 credit points of Senior units of study in appropriate subject areas and who are of sufficient merit. The programs are:

- Applied Mathematics
- Mathematical Statistics
- Pure Mathematics

Honours units of study consist of both formal coursework and an essay or project. There is provision for students to take approved units of study from other research areas within the School and from other Departments. The essay or project is a substantial part of the year's assessment and is closely supervised by a staff member. Students are required to prepare a talk about their essay or project topics.

Interested students should contact the fourth year coordinator at some convenient time before pre-enrolment. Senior level students contemplating an Honours year are strongly advised to consult the Senior unit of study handbooks for further advice and to discuss their choice of Senior units of study with the appropriate Senior level coordinator.

Further details of the Honours year are available from the coordinators for Applied Mathematics 4, Mathematical Statistics 4 and Pure Mathematics 4 and the respective unit of study handbooks.

Media and Communications units of study

The following units of study are only available to students in the Bachelor of Science Media and Communications degree.

ENGL 1005 **Language and** Image

6 credit points. B A, B A (Media & Comm), B Int S, Dip Arts, UG Study Abroad Program. Mr. Ronalds. **Session:** Semester 2. **Classes:** One lhr lecture and one 2hr workshop. **Prohibitions:** ENGL 1050. **Assessment:** Two 500wd assignments, one 1500wd essay, one 1.5hr examination, and workshop participation.

This unit of study will introduce students to the construction of meaning in written and visual texts, using Graham Greene's novel The Quiet American and the film of the novel as focal points.

A range of other fiction, academic and media texts will be used to explore social processes of textual construction and interpretation. In the workshops, students will learn detailed analytic techniques, including close grammatical analysis, as tools for the interpretation of text and image. The lectures will introduce more descriptive topics, such as historical shifts in relations between language and image, narrative organisation, categories of text, and social agency and power in the production of text.

Textbooks

Greene, G. The Quiet American

Butt, D., et al., Using Functional Grammar: An Explorer's Guide.

A Resource Book will be available from the University Copy Centre

MECO 1001 **Australian Media Studies**

6 credit points. B A (Media & Comm), B Sc Media Commun, UG Study Abroad Program. Dr. M Brennan. **Session:** Semester 2. **Classes:** one 2hr lecture, one lhr tutorial. **Assessment:** One 1500 word essay (30%); One 1500 word essay (40%); one 2hr exam (30%).

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This unit offers an introduction to the history and theory of media and communications studies. Students will gain a foundation in key concepts, methodologies and theorists in the field. They will also explore the interdisciplinary roots of media and communications studies and acquire basic research skills. By the end of the unit students should be familiar with major shifts in the history and theory of media and communications studies and with basic concepts and methodologies in the field.

Textbooks

Alan McKee, Textual Analysis: A Beginner's Guide, SAGE London. 2003

It is recommended that students purchase a reader from the Copy Centre.

MECO 1003 **Principles of Media Writing**

6 credit points. B A (Media & Comm), B Sc Media Commun, UG Study Abroad Program. A/Prof Lumby. **Session:** Semester 1. **Classes:** One 2hr lecture, one lhr tutorial. **Assessment:** 400-word news story (20 %); 500-word colour news story (20 %); 700-word broadcast script (20%); Two hour examination (30 %).

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This unit will give students foundational skills in writing for the print and broadcast media. Students will learn the elements of journalistic style, how to structure news and feature articles, how to script basic broadcast and online news, and be introduced to the principles of interviewing and journalistic research.

Textbooks

Course reader ; David Conley, 'The Daily Miracle: An Introduction to Journalism', Oxford University Press, Melbourne, 1997; Style, News Custom, 2005.

MECO 2601 **Radio Broadcasting**

6 credit points. B A (Media & Comm), B Sc Media Commun. Dr Anne Dunn. **Session:** Semester 1. **Classes:** One 2 hour lecture and one 2 hour workshop. **Prerequisites:** 12 Junior credit points of MECO units and either ENGL1000 or ENGL1050 or ENGL1005 or LNGS1005. **Prohibitions:** MECO 2001. **Assessment:** One 1500 word essay, one production diary, radio scripts and final work (equivalent 1000 words), one 2 hour examination.

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This unit of study provides an introduction to the history of radio and to the theory and practice of radio production, by combining theoretical analysis with practical experience. The unit has a strong practical component in which students will research, script, record and edit a radio news story and a radio magazine item.

Textbooks

Phillips, G and Lindgren, M (2002) Australian Broadcasting Journalism Manual,2nd edn., Oxford University Press. It is recommended that students purchase a reader from the Copy Centre

MECO 2603 **Media Relations**

6 credit points. B A (Media & Comm), B Sc Media Commun, UG Study Abroad Program. Dr. Richard Stanton. **Session:** Semester 2. **Classes:** one lhr lecture, one 2hr tutorial. **Prerequisites:** 12 Junior credit points of MECO units and either ENGL1000 or ENGL1050 or ENGL1005 or LNGS1005. **Prohibitions:** MECO2003. **Assessment:** 4000-4500 words of practical assignments.

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This unit of study will examine the relationships between stakeholders with an interest in public communication including the environmental groups, media, the corporate sector, government, not for profit industries and health and community relations. It provides an overview of media relations theory including issue framing, agenda setting, and co-relational development. It examines image, reputation and relationship building. Students learn to develop a media relations campaign strategy, budget and timeline, using tactical approaches for successful media relations. Students will learn to identify controlled and uncontrolled media, set research priorities and objectives and framing a client response.

MECO 3601 **Video Production**

6 credit points. B A (Media & Comm), B Sc Media Commun. Dr Steven Maras. **Session:** Semester 2. **Classes:** One 2hr lecture, one 2hr workshop. **Prerequisites:** 12 Junior credit points of MECO units and either ENGL1000 or ENGL1050 or ENGL1005 or LNGS1005. **Prohibitions:** MECO 3001. **Assessment:** Individual news study (15%); Group produced video and tutorial presentation (40%); production log & reflection statement (15%); 2 hr exam (30%).

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This is an introduction to the theory and practice of digital video production, with a strong practical component, emphasizing information-based programming (news, current affairs, corporate video, documentary and infotainment). Students will be expected to produce short video items individually and in groups, using professional standard desktop editing software.

Textbooks

Mollison, Martha (2003). Producing Videos: A Complete Guide. 2nd edition. AFTRS/ Allen & Unwin: Sydney. There is a reccommended Reader, available from the University Copy Centre.

MECO 3602 **Online Media**

6 credit points. B A (Media & Comm), B Sc Media Commun. Ms Crawford. **Session:** Semester 2. **Classes:** one lhr lecture, one 2hr tutorial. **Prerequisites:** 12 Junior credit points of MECO units and either ENGL 1000 or ENGL 1050 or ENGL 1005 or LNGS1005. **Prohibitions:** MECO 3002. **Assessment:** One web site worth 40%; one production log (15%); one two hour exam (30%); one web site proposal (10%); tutorial participation (5%).

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This unit will examine the role of the Internet, new media and the way the web is changing the media landscape. It explores the development and growth of the Internet, and provides a critical framework in which to understand the current industry. By the end of the unit, students will be familiar with key theoretical and cultural issues in online media, and will engage in both offline and online analysis of the Internet. Students will also gain practical skills in writing and producing for the web and will design and develop their own web sites.

Textbooks

Flew, Terry (2005), 'New Media:An Introduction'. 2nd Edition. Melbourne:Oxford University Press.pp280. ISBN 0195550412. Students are also recommended to purchase the reader from the Copy Centre.

MECO 3603 **Media,** Law **and Ethics**

6 credit points. B A (Media & Comm), B Sc Media Commun, UG Study Abroad Program. Dr Anne Dunn (2006 only). **Session:** Semester 1. **Classes:** one 2hr lecture, one lhr tutorial. **Prerequisites:** 12 Junior credit points of MECO units and either ENGL1000 or ENGL1050 or ENGL1005 or LNGS1005. **Prohibitions:** MECO3003. **Assessment:** Tutorial paper and media law exercise, equiv.2500 wrds (60%), 2 hr exam (30%), participation & attendance (10%).

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

MECO3603 will introduce students to the area of Media Law and Ethics through discussion of key legal, ethical, and cultural issues relevant to journalism and the professional fields of public communication. Students will be given an introductory survey of the main ethical theories in Western thought to establish a framework within which to examine specific ethical issues that relate to media. They will also be introduced to those aspects of the law that impinge on the work of media professionals.

Textbooks

There is a Reader of key articles, available from the University Copy Centre. There are also two textbooks:

Lumby, Catharine, and Elspeth Probyn, Eds. (2003) 'Remote Control: New Media, New Ethics', Cambridge University Press, Melbourne.

Pearson, Mark (2004) 'The Journalist's Guide to Media Law: Dealing with Legal and Ethical Issues'. 2nd Edition. Allen and Unwin, Crows Nest.

MECO 3605 **Media Globalisation**

6 credit points. B A (Media & Comm), B Sc Media Commun, UG Study Abroad Program. Dr M Brennan. **Session:** Semester 1. **Classes:** one 2hr lecture, one lhr tutorial. **Prerequisites:** 12 Junior credit points of MECO units and either ENGL 1000 or ENGL1050 or ENGL1005 or LNGS1005. **Prohibitions:** MECO3005. **Assessment:** One 2000 word essay (40%); Tutorial Presentation/Debate (20%); one 2hr exam (40%). *NB: NB: Available to BA (Media & Communication) andBSc (Media & Comm) students only*

This unit aims to demonstrate the complexity of media globalisation and to examine in depth some of the common assumptions associated with the term. While the unit will consider the impact of global market forces (i.e. cheap labour in developing countries, environmental issues, etc), it is interested in the dynamics of globalisation more generally, and media globalisation more specifically. Students can expect to appreciate that media globalisation is a complex proposal that involves formats, localisation, symbolic currency and negotiation.

Textbooks

Stuart Cunningham and Graeme Turner (Ed.), The Media and Communications in Australia, Allen & Unwin, Sydney, 2002

It is recommended that students purchase a reader from the Copy Centre.

MECO 3671 **Media and Communications Internship**

6 credit points. B A (Media & Comm), B Sc Media Commun. Ms Blue. **Session:** Semester 2, Semester 1, Summer. **Classes:** There are no lectures, but attendance may be required at a programme of industry talks and/or student seminars. **Prerequisites:** 30 senior credit points of MECO, including MECO 3603 (which may be taken in the same semester). Students may not enrol in MECO 3671 prior to the second semester of their 3rd year.

(MECO3002 and MECO 3003 (4th Years)). **Corequisites:** MEC03672 (4th Years) or MECO3602 andMECO3603 (3rd years). **Prohibitions:** MECO3701 andMECO3702. **Assessment:** Students must satisfy the requirements of an internship contract with their workplace, including attendance and performance, as evaluated through a workplace supervisor report. The internship and journal is assessed on a satisfactory/unsatisfactory basis.

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

The internship consists of a work placement comprising a minimum of 20 working days in a media organisation, assisted and supervised by both the workplace and the department. Placements may include print, broadcast and online media, public relations and advertising organisations. Students will be required to present a journal recounting their experiences during the internship. In consultation with their supervisor, students will formulate a topic for their reasearch essay.

MECO 3672 **Internship Project**

6 credit points. B A (Media & Comm), B Sc Media Commun. Ms Blue. **Session:** Semester 1, Summer. **Prerequisites:** 30 senior credit points of MECO, including MECO 3603 (which may be taken in the same semester). Students may not enrol in MECO 3671 prior to the second semester of their 3rd year. **Corequisites:** MEC03671 and MECO3002 and MECO3003 (4th Years) or MEC03671 and MECO3602 and MECO3603 (3rd years). **Prohibitions:** MECO3701 and MECO3702. **Assessment:** 4000-5000 word research essay. Students, in consultation with a supervisor, will formulate a topic for their research essay.

NB: Available toBA(Media and Commun) andBSc (Media & Cmmunications) students only.

Students will be required to present a journal recounting their experiences during the internship and in consultation with a supervisor, will formulate a topic for their 4000 word research essay. Students will be required to attend one or two seminars at the beginning of the semester, on how to conduct research.

Textbooks

Stokes, Jane (2002) How to do Media and Cultural Studies, London: Sage

Medical Science units of study

The following units of study are only available to students in the Bachelor of Medical Science degree. Please consult degree information in Chapter 2, the Tables earlier in this chapter, and the relevant Departments/Schools entries in this chapter for descriptions of other units of study required for this degree.

Bachelor of Medical Science Junior units of study

All prerequisite and corequisite units of study, details of staff, examinations, units of study delivery and descriptions are as described under the appropriate Department or School entry in this chapter

Bachelor of Medical Science Intermediate Core units of study

BMED 2801 **Cell Structure and Function**

6 credit points. B Med Sc. Dr Vladimir Balcar. **Session:** Semester 1. **Classes:** 2 lee; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916). **Assessment:** One 2hr exam; on-line quizzes, continuous assessment, prac reports.

This unit of study begins with a discussion of the unique morphology of unicellular prokaryotic organisms (bacteria, fungi and viruses) followed by the structure and function of human cells. A strong understanding of cellular structures is essential for an appreciation of whole body function. Basic cell structure is examined by focussing on cell specialisation and tissue organisation in humans. The structure and function of excitable cells such as nerve and muscle will lead to a discussion of membrane potential, synaptic transmission and neuromuscular junction. The unit of study then gives an introduction into how gene expression is regulated during development, and how the cell cycle is controlled to coordinate programmed events such as differentiation and cell death. This allows discussion of the consequences and treatment of abnormal tissue growth (cancer).

Practical classes not only complement the lecture material but also introduce students to a wide range of technical skills, tissue processing and bacterial cultivation. In addition, the sessions are also designed to provide students with generic skills such as record keeping, data collection and presentation, protocol planning and written communication.

BMED 2802 **Molecular Basis of Medical Sciences**

6 credit points. B Med Sc. A/Prof Robin Allan. **Session:** Semester 1. **Classes:** 2 lee; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916). **Assessment:** One 2hr exam; on-line quizzes, prac reports.

This unit of study extends pre-existing understanding of the way in which genetic information is stored, transmitted and expressed. Students will be introduced to the role of enzymes in the catalysis of cellular reactions and the pharmacological strategies employed to exploit our knowledge of these mechanisms is then discussed. Intracellular signalling cascades, cell to cell signalling and pharmacological intervention in these processes is covered. The molecular basis of drug action and the use of DNA technology in drug design will be discussed. Students will then cover the application of medical genetics to the study of advanced gene expression, recombinant technology, cloning and gene products, transgenics and the linkage and mapping of genes including reference to DNA fingerprinting and the human genome project and gene therapy.

The technical skills taught in the practical classes include the use of restriction enzymes, the separation of DNA molecules using electrophoresis, the inspection of chromosomes, linkage mapping, gene transfer and the measurement of gene expression. In addition to nurturing the skills involved in the design and execution of experiments, the practical sessions will formally teach students report writing skills and will give students practice at articulating feedback to their peers.

BMED 2803 **Cardiac, Respiratory and Renal Function**

6 credit points. B Med Sc. Dr Irene Schneider. **Session:** Semester 1. **Classes:** 2 lee; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916). **Assessment:** One 2hr exam; on-line quizzes, essay, prac reports.

The maintenance of constant conditions in the human body is dependent on thousands of intricate control mechanisms. This unit of study examines many of those homeostatic processes with specific reference to major apparatus such as the respiratory, cardiovascular and renal. The structure and function of the cardiovascular system is discussed and cardiac output, blood pressure and blood flow are studied. Discussion of the respiratory system embraces the structure of the respiratory organs and description of the mechanism of the transport of gases to and from cells. Similar treatment of the renal system involves anatomical and histological investigation of kidney structure and a physiological description of kidney function.

Practical classes are designed to nurture the same generic attributes taught in BMED2801 and BMED2802 but, in addition, students are introduced to a wide range of anatomical and physiological technical skills. Specifically, students will investigate the structure and function of the heart and blood vessels, the components of the respiratory system and the kidney - all at the cellular and organ level. Students will also conduct experiments (often on themselves) which show how heart rate and blood pressure are controlled, how breathing is regulated and how urine output is modulated in response to both physiological and pharmacological stimuli.

BMED 2804 **Digestion, Absorption and Metabolism**

6 credit points. B Med Sc. Prof Richard Christopherson. **Session:** Semester 2. **Classes:** 2 lee; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916). **Assessment:** One 2hr exam; on-line quizzes, prac reports.

This unit of study gives an introduction to the structures used to digest and absorb fuels, at both the anatomical and histological level. This is then followed by discussion of the utilisation and fate of absorbed nutrients. After an overview of the alimentary tract and associated organs, the detailed anatomy of the oral cavity, oesophagus, stomach, intestines, liver, etc is considered. This is complemented by description of the specialised cell types in the digestive system, discussion of the transport mechanisms employed to absorb nutrients, and consideration of the control systems used to regulate activity of the digestive process. The role of intestinal microflora in the gastrointestinal tract, contributing to both beneficial digestion and absorption of nutrients, as well as to pathogenic disruption, is also discussed in this unit of study. The fundamentals of metabolism are introduced, in particular, the chemical reactions that are responsible for fuel processing. The pharmacokinetic angle is explored further with discussion of the metabolism and absorption of drugs including the detoxification and excretion of xenobiotic compounds.
Practical classes give students extensive experience with inspection of the digestive system at both the cellular and gross anatomical level. The peristaltic reflex and pharmacological influences are explored. These sessions are designed to nurture observation, data analysis, record keeping and report writing skills.

BMED 2805 **Hormones, Reproduction and Development**
6 credit points. B Med Sc. **Session:** Semester 2. **Classes:** 2 lee; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916). **Assessment:** One 2hr exam; on-line quizzes, essay, prac reports.
This unit of study examines hormonal control of human body processes. Specifically, students will investigate the structure and function of endocrine glands: the pituitary, thyroid and pancreas - all at the cellular and organ level. Examples of the influence of hormones on metabolic processes are provided by consideration of fuel selection during exercise and starvation, and diabetes and obesity. This enables students to appreciate the extent of the contribution of hormones to organ co-ordination in response to circumstances such as starvation, obesity, exercise and diabetes. Students extrapolate to consider the regulation of fuel selection during exercise and the cause of fatigue. The fate of the macronutrients (carbohydrate, fat and protein) is then considered by reference to their uptake, disposal and reassembly into storage fuels and cellular structures. The biochemical pathways involved in the extraction of energy from the macronutrient fuels are then covered, with particular emphasis on the whole body integration and regulation of these metabolic processes. This leads onto discussion of performance enhancing drugs and also provides a solid background for the understanding of pharmacological intervention in these conditions. The hormones involved in reproduction, contraception, fertilisation and pregnancy are also discussed, leading on to foetal-new-born transition and discussion of the development of the human embryo and cell differentiation.
In the practical classes, students are introduced to a wide range of biochemical technical skills. Specifically, students will investigate the structure and function of the important endocrine glands - all at the cellular and organ level. Students will design a biochemical kit for the evaluation of blood glucose and will perform a glucose tolerance test to investigate how glucose levels are regulated and modulated in response to a glucose load. In addition, sessions are designed to nurture oral presentation skills, hypothesis testing, data analysis, troubleshooting, instruction writing and feedback skills.

BMED 2806 **Sensory and Motor Functions**
6 credit points. B Med Sc. Dr Richard Ward. **Session:** Semester 1. **Classes:** 2 lee; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916). **Assessment:** One 2hr exam; on-line quizzes, prac reports.
This unit of study examines how neural and motor systems are adapted to sense and respond to changes in the external environment. After consideration of the basic anatomical organisation of the nervous and sensory systems, the way in which nerve signals are integrated and co-ordinated in response to external stimuli are covered in more detail. Various senses such as vision, touch and hearing are studied, together with a discussion on motor reflexes. The receptors involved in normal modes of communications are discussed before specific examples such as the fright and flight and stress responses are considered. This is complemented by discussion of the effects of drugs on the nervous system, with special reference to pain and analgesics. An appreciation is gained of how toxins and infections can perturb the normal neuromuscular co-ordination. Thus pharmacological and pathological considerations, such as the use of poisoned arrows and muscle paralysis and viral and tetanus infections, are studied in concert with relevant physiological concepts.
In practical classes, students perform experiments (often on themselves) to illustrate the functioning of the senses and motor control and co-ordination involving both stretch and flexor reflexes. In addition, students extend their anatomical expertise by examining the structure and function of the nervous system and the skeleton (especially the vertebral column, the thorax and the limbs). Practical sessions also include the effects of analgesics on experimental pain and case studies of tetanus and botulism. The practical sessions draw widely on, and nurture, the generic skills taught in preceding units of study but particularly in BMED2804 and BMED2805.

BMED 2807 **Microbes and Body Defences**
6 credit points. B Med Sc. A/Prof Helen Briscoe. **Session:** Semester 2. **Classes:** 2 lee; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916). **Assessment:** One 2hr exam; on-line quizzes, continuous assessment, prac reports.
This unit of study begins by introducing the concepts of disease transmission, pathogenicity and virulence mechanisms of microbes. How the body deals with injury and infection is discussed by exploring host defences. Sections on wound healing, clotting and inflammation cover the response to physical damage and this is complemented by discussion of the pharmacological basis of anti-inflammatory agents and anti-coagulants.
For a full understanding of the process of infection, it is necessary to have an appreciation of the range of pathogens and injuries with which the body must cope. Therefore this unit of study examines the structure and function of pathogenic microorganisms (including bacteria, fungi, protists, and viruses, etc). The response of the body to pathogen invasion is studied by discussion of both molecular and cellular immune responses. In particular, this gives students an appreciation of the structure, production and diversity of antibodies, the processing of antigens, operation of the complement system and recognition and destruction of invading cells. This allows students to appreciate the basis of derangements of the immune system and the mechanism of action of immuno-modulatory drugs.
Practical classes allow students to obtain experience in, and an understanding of, a range of techniques in classical and molecular virology, bacteriology and immunology. In addition, the practical sessions draw widely on, and nurture, the generic skills taught in preceding units of study.

BMED 2808 **Disease in Society**
6 credit points. B Med Sc. Helen Agus. **Session:** Semester 2. **Classes:** 2 lee; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **Prohibitions:** All Intermediate level units offered by the Schools of Molecular and Microbial Biosciences, Medical Sciences and BIOL(2006/2906) and BIOL(2016/2916). **Assessment:** One 2hr exam; on-line quizzes, continuous assessment, prac reports.
Disease in Society seeks to integrate basic knowledge of important diseases, ranging from metabolic diseases through infections and heart disease to 'social' diseases such as drug addiction and use of psychoactive compounds. About half the unit considers infectious diseases: viral, bacterial, fungal and parasitic. The other half looks at inherited disorders, cardio-respiratory disorders such as angina, heart failure and asthma. Society's approaches to dealing with these diseases - whether by pharmacological intervention, counselling or lifestyle change are discussed. Putting the disease in the relevant social context is emphasized in all aspects of the unit.
The impact of bacteria and viruses on individuals and society is taught with reference to specific infectious diseases (eg influenza, polio, herpes, STDs, etc) and this leads into an introduction of epidemiology. Included in the discussion of the way in which these organisms cause and transmit disease is a consideration of how antibiotics and anti-viral drugs work and how microbes can become drug resistant.
Practical classes are designed to complement the lectures and provide a 'hands-on' experience in investigating disease. Also included are tutorial sessions in which hospital microbiologists guide students though clinical case studies and in an integrated session, students examine the infection, immunity and pathology of tuberculosis. These sessions are designed to nurture an appreciation of the importance of an integrative approach to the study of disease in today's society. The generic skills taught in preceding units of study are further reinforced.

Bachelor of Medical Science Senior Core units of study
Students are required to complete at least 36 credit points of Senior units of study chosen from the core subject areas of Anatomy and

Histology, Biology (Genetics), Biochemistry, Cell Pathology, Immunology, Infectious diseases, Microbiology, Pharmacology and Physiology, as listed in Table IV. Descriptions are listed here and under the relevant department headings in this chapter where the units are offered by other Schools/Departments in the faculty.

Bachelor of Medical Science Senior Elective units of study
All students in the Bachelor of Medical Science can elect to take a maximum of 12 credit points of elective units in order to complete the requirements of the degree. This is an opportunity for students to study subjects outside the confines of the Medical Science degree. These elective units are taken in the Senior year.
There are almost no restrictions on what units may be taken as electives. Students may take further units in subjects which do not form part of the Intermediate and Senior core of the BMedSc degree, for example, Mathematics, Chemistry or Physics. They may choose subjects from other Science discipline areas which they have not previously studied, for example, Computer Science or Geology. Alternatively they may choose to study a subject from another faculty, for example, a language.
Exactly what elective units of study are taken, and when, is constrained principally by timetable considerations.
Students may not take additional units in medical science discipline area units in order to meet the elective requirements.
Beyond this there are no restrictions on the subjects which may be taken as electives. Students should note, however, that there may be restrictions on enrolment in particular units imposed by other faculties.
Students should consult degree information in Chapter 2, the Tables earlier in this chapter and the handbooks of other faculties for details of other possible choices.

INFD 3012 **Infectious Diseases**
6 credit points. B Med Sc, UG Study Abroad Program. A/Prof. Colin Harbour. **Session:** Semester 2. **Classes:** 2 lec/wk; 2 tut and 4 prac/fortnight. **Assumed Knowledge:** Intermediate microbiology, immunology, molecular biology and genetics. **Prerequisites:** 42 cedit points of intermediate BMED units including BMED2807. **Assessment:** Formal examination: one 2hr exam, 60%
Progressive assessment: includes lab, quizzes, 2000w essay, tutorial case presentation, poster presentation, 40%.
NB: The completion of MICR3011 is strongly recommended prior to undertaking this course.
Infectious diseases occur as a result of interactions between a host and a microbial parasite. This unit of study will explain how infectious agents interact with human hosts at the molecular, cellular, individual patient and community levels to cause diseases and how the hosts attempt to combat these infections. The unit will be taught by the discipline of Infectious Diseases and Immunology of the Department of Medicine within the Central Clinical School, Faculty of Medicine with involvement of associated clinical and research experts who will contribute lectures and theme sessions on their own special interests. The primary learning vehicle in this unit will be the case study involving three or four cases per week on the diseases theme of the week, e.g. Pneumonia in week 1, wound infections in week 2 etc. Students are strongly recommended to complete MICR3011 before enrolling in this unit.
Textbooks
Infectious Diseases: a clinical approach. Edited by Yung, McDonald et al. IP Communications 2005. ISBN 09578617.

Bachelor of Medical Science Honours
The Bachelor of Medical Science Honours degree is governed by regulations of the Senate and of the Faculty of Science as described in chapter 5.
An Honours degree may be taken by students of sufficient merit in any of the Departments offering Senior level core units. Entry to Honours units is regulated by individual Departments and the exact detail of Honours programs also varies from Department to Department. Students interested in undertaking Honours should consult the relevant Department for further details.

Medicinal Chemistry
Medicinal Chemistry is an interdisciplinary major offered within the BSc. It is concerned with the chemistry underpinning the design, discovery and development of new pharmaceuticals, and is jointly administered by the School of Chemistry and the Department of Pharmacology. Medicinal Chemistry examines why some types of chemical compounds are toxic, why some have therapeutic value, and the mode of drug action at the molecular level. A major in Medicinal Chemistry includes the study of natural and synthetic compounds of biological and medicinal importance, how molecules interact with each other and how specific molecules can influence metabolic pathways in living organisms.
A student seeking to complete this major will study Junior and Intermediate Chemistry, and also Intermediate Pharmacology, as prerequisites for the Senior units of study. Refer to Table 1 for an enrolment guide and to entries under the contributing schools and departments for unit descriptions.

Microbiology
The discipline of Microbiology in the School of Molecular and Microbial Biosciences offers units of study that equip students for a career in Microbiology in fields of health, industry and basic research. In addition, it provides introductory units of study to students of agriculture, pharmacy and science. These units of study will help students who wish to specialise in related fields where microorganisms are often used in studying life processes, e.g. biochemistry, genetics and botany.

Microbiology Intermediate units of study
MICR 2021 **Introductory Microbiology**
6 credit points. B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2.5 lee, 0.5 tut or prac & 2.0 prac/wk. **Prerequisites:** (6 credit points of Junior Biology or MBLG 1001) and 6 credit points of Junior Chemistry. **Prohibitions:** MICR (2921 or 2024 or 2001 or 2901 or 2003 or 2007 or 2011 or 2909). **Assessment:** One 2hr exam, continuous assessment in prac, two assignments, prac exam.
NB: Students are very strongly recommended to complete MICR (2021 or 2921 or 2024) before enrolling inMICR2022 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT (2001 or 2901).
This unit of study aims to give the student sufficient knowledge and technical skills to provide a foundation for future study of microbiology. It is also suitable for students requiring a working knowledge of microbiology while specialising in related fields e.g. molecular biology.
Topics covered include history and scope of microbiology, methodology, comparative study of the major groups of microorganisms (bacteria, algae, protozoa, fungi and the viruses), a detailed study of bacteria including structure, classification and identification, growth, death and control.
An introduction to microbial ecology of soil and water, as well as examples of microbial interactions illustrates the significance of microorganisms in the global, natural cycles of synthesis and degradation.
The practical component focuses on basic, safe microbiological techniques and the use of these to study examples of microbial activity which are illustrative of the lecture series.
Textbooks
Prescott L M et al. Microbiology. 6th edn, WCB/McGraw-Hill, 2005

MICR 2022 **Applied Microbiology**
6 credit points. B An Vet Bio Sc, B E, B Hort Sc, B L W Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), B Sc Agr, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2.5 lee, 0.5 tut or prac & 2.0 prac/wk. **Assumed Knowledge:** MICR (2021 or 2921 or 2024). **Prerequisites:** (6 credit points of Junior Biology or MBLG1001) and 6 credit points of Junior Chemistry. **Prohibitions:** MICR (2922 or 2002 or 2902 or 2004 or 2008 or 2012 or 2909). **Assessment:** One 2hr exam, continuous assessment in prac, 2 assignments, prac exam.
NB: Students are very strongly recommended to complete MICR (2021 or 2921 or 2024) before enrolling inMICR2022 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT (2001 or 2901).
This unit of study is designed to expand the understanding of, and technical competence in, microbiology, building on the knowledge and skills acquired in Microbiology 2021 or 2921.
The lectures cover two broad topics: molecular microbiology of the organism and microbial biotechnology and applications. The molecular microbiology section covers aspects of microbial genetics and the structure and functioning of procaryotic cells.
The microbial biotechnology section covers food and agricultural microbiology (production, spoilage and preparation, as well as the safety of foods) and aspects of public health and medical microbiology (host parasite relationships, host defences, epidemiology of selected diseases, prevention of disease). Industrial microbiology deals with large scale production, traditional products, recombinant DNA products, biosensors and biocontrol agents, biodeterioration and bioremediation.
Practical classes enable the study of material which both complements and supplements the lecture topics.
Work experience
On completion of MICR 2022 or 2922, students who have successfully completed MICR2021 and are enrolled in the BSc or BSc (Advanced) may be offered the opportunity to undertake work experience for approximately one month in a microbiology laboratory of

choice (hospital, food, research, environmental, etc.), subject to availability of places.
Textbooks
Prescott L M et al. Microbiology. 6th edn, WCB/McGraw-Hill, 2005

MICR 2024 **Microbes in the Environment**
6 credit points. B Hort Sc, B L W Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biotechnology), B Sc Agr. Dr Andrew Holmes. **Session:** Semester 2. **Classes:** 2 lectures and 3 prac/week. **Prerequisites:** 30 credit points of Junior Science or Faculty of Agriculture, Food and Natural Resource units including 6 credit points of Junior Biology. **Prohibitions:** MICR (2021 or 2921 or 2001 or 2901 or 2003 or 2007 or 2011 or 2909).. **Assessment:** One 2hr exam, weekly on-line quiz, project report and seminar.
NB: Students are very strongly recommended to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2922 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT (2001 or 2901).
This unit introduces the diversity of microbes found in soil, water, air, plants and animal environments. Through an examination of their physiology and genetics it explores their interactions with plants, animals and each other, and their roles as decomposers and recyclers in the environment. The soil is a rich microbial environment, and the concept of soil health and its relationship to plant growth is discussed. Practical classes introduce techniques and skills in isolating, quantifying and culturing microbes, designing and interpreting experiments to study microbial growth, and in preparing and presenting data.
Textbooks
Atlas RM and Bartha R (1997) Microbial Ecology: Fundamentals and applications. 4th Edition. Benjamin/Cummings Scientific Publishing, Menlo Park, CA

MICR 2921 **Introductory Microbiology (Advanced)**
6 credit points. B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2.5 lee, 0.5 tut or prac & 2.0 prac/wk. **Prerequisites:** 6 credit points of Junior Chemistry and Distinction in 6 credit points of Junior Biology or MBLG1001. **Prohibitions:** MICR (2021 or 2024 or 2001 or 2901 or 2003 or 2007 or 2011 or 2909). **Assessment:** One 2hr exam, continuous assessment in prac, 2 assignments, prac exam.
NB: Students are very strongly recommended to complete MICR(2021 or 2921 or 2024) before enrolling in MICR2022 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT(2001 or 2901).
This unit of study is based on MICR2021 with approximately six alternative lectures/tutorials on advanced aspects of the material covered in MICR2021. The content and nature of these components may vary from year to year.
Textbooks
As for MICR2021

MICR 2922 **Applied Microbiology (Advanced)**
6 credit points. B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2.5 lee, 0.5 tut or prac & 2.0 prac/wk. **Assumed Knowledge:** MICR (2021 or 2921 or 2024). **Prerequisites:** 6 credit points of Junior Chemistry and Distinction in 6 credit points of Junior Biology or MICR (2021 or 2921) or MBLG units. **Prohibitions:** MICR (2022 or 2002 or 2902 or 2004 or 2008 or 2012 or 2909). **Assessment:** One 2hr exam, continuous assessment in prac, 2 assignments, prac exam.
NB: Students are very strongly recommended to complete MICR (2021 or 2921 or 2024) before enrolling in MICR2922 in Semester 2. For progression on to Senior Microbiology units, students must also complete MBLG1001 or PLNT (2001 or 2901).
This unit of study is based on MICR2022 with approximately six alternative lectures/tutorials on advanced aspects of the material covered in MICR2022. The content and nature of the alternative components may vary from year to year.
Textbooks
As for MICR 2021

Microbiology Senior units of study

MICR 3011 **Microbes in Infection**
6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Mrs Helen Agus. **Session:** Semester 1. **Classes:** 2 hrs of lectures & 3hr prac/wk. **Prerequisites:** At least 6 credit points of MBLG units and MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2807 and 2808). For BScAgr students: PLNT (2001 or 2901) and MICR (2022 or 2922). **Prohibitions:** MICR3911, MICR3001, MICR3901. **Assessment:** One 2hr exam, continuous assessment, practical work.
This unit is designed to further develop an interest in, and understanding of, medical microbiology from the introduction in Intermediate Microbiology. Through an examination of microbial structure, virulence, body defences and pathogenesis, the process of acquisition and establishment of disease is covered.
The unit is divided into three themes:
1. Infections of body systems: bacterial and fungal infections that are problematic at particular sites, host defences, virulence mechanisms;
2. Public health microbiology: epidemiology, international public health, parasitic infections and food microbiology;
3. Emerging and re-emerging diseases: the impact of societal change with respect to triggering new diseases and causing the re-emergence of past problems.

The practical component is designed to enhance students' practical skills and to complement the lecture series. Clinical tutorial sessions underpin and investigate the application of the material covered in the practical classes.
Textbooks
Murray P.R.et al. Medical Microbiology. 5th ed., Mosby, 2005.

MICR 3911 **Microbes in Infection (Advanced)**
6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Mrs Helen Agus. **Session:** Semester 1. **Classes:** 2.5 hrs of lectures &3hr prac/wk. **Prerequisites:** At least 6 credit points of MBLG units and Distinction in MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including in BMED (2807 or 2808) with a Distinction in one of these two.. For BScAgr students: PLNT (2001 or 2901) and MICR (2022 or 2922) including one Distinction. **Prohibitions:** MICR3011, MICR3001, MICR3901. **Assessment:** One 2hr exam, in class theory assessment, continuous assessment, practical work.
This unit is available to students who have performed well in Intermediate Microbiology and is based on MICR3011 with a series of additional lectures related to the research interests in the Discipline. Consequently, the unit of study content may change from year to year.
Textbooks
Murray P.R.et al. Medical Microbiology. 5th ed., Mosby, 2005.

MICR 3012 **Molecular Biology of Pathogens**
6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr D Carter. **Session:** Semester 2. **Classes:** 2 hrs of lectures & 3hr prac/wk. **Prerequisites:** At least 6 credit points of MBLG units and MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802, 2807 and 2808). For BScAgr students: PLNT (2001 or 2901) and MICR2024. **Prohibitions:** MICR3912, MICR3002, MICR3902, MICR3003, MICR3903, MICR3004, MICR3904. **Assessment:** One 2hr exam, continuous assessment, practical work.
This unit of study is designed to provide an understanding of the virulence mechanisms underlying microbial disease at the molecular level. The following topics will be covered: pathogenic processes and the molecular basis of adhesion, cell invasion and immune evasion in bacteria; bacterial and fungal toxins and their associated diseases; modern topics in microbiology using selected microbial pathogens as examples; and modern techniques in the analysis, diagnosis and prevention of microbial diseases.
Textbooks
Salyers A.A. and Whitt D.D. Bacterial Pathogenesis. A Molecular Approach. 2nd ed., ASM, 2002

MICR 3912 **Molecular Biology of Pathogens (Adv)**
6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr D Carter. **Session:** Semester 2. **Classes:** 2.5 hrs of lectures & 3hr prac/wk. **Prerequisites:** At least 6 credit points of MBLG units and Distinction in MICR (2022 or 2922 or 2002 or 2902). For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 or 2807 or 2808) with a Distinction in one of these three. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. **Prohibitions:** MICR3012, MICR3002, MICR3902, MICR3003, MICR3903, MICR3004, MICR3904. **Assessment:** One 2hr exam, in class theory assessment, continuous assessment, practical work.
This unit is available to students who have performed well in Intermediate Microbiology and is based on MICR3012 with a series of additional lectures related to the research interests in the Discipline. Consequently, the unit of study content may change from year to year.
Textbooks
Salyers A.A. and Whitt D.D. Bacterial Pathogenesis. A Molecular Approach. 2nd ed., ASM, 2002

MICR 3022 **Microbial Biotechnology**
6 credit points. B Hort Sc, B L W Sc, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc Agr, UG Study Abroad Program. Dr A Holmes. **Session:** Semester 2. **Classes:** 2 hrs of lectures & 3hr prac/wk. **Prerequisites:** At least 6 credit points of MBLG units and 6 credit points of Intermediate MICR units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 and 2807). For BScAgr students: PLNT (2001 or 2901) and MICR2024. **Prohibitions:** MICR3922, MICR3002, MICR3902. **Assessment:** One 2hr exam, continuous assessment, practical work, practical reports.
This unit of study will cover both traditional microbial biotechnologies and the impact of new technologies on the emergence of new industries. Existing applications are based on empirical management of a remarkably small proportion of microbial diversity. The past ten years have seen dramatic advances in the capacity to explore microbial diversity and actively manage microbial communities. This course will focus on how these new techniques are creating new opportunities in biotechnology. General applications to be covered include human health (managing diseases that do not have a single causative agent), environmental health (waste treatment and using microorganisms as indicators of sustainability), and production of bioactive compounds (enzymes, antibiotics). Specific techniques covered will include gene discovery via environmental metagenom-

ics; microarrays for real-time monitoring of microbial communities; high throughput screening for isolation and recovery of producers of novel bioactive compounds.
Textbooks
To be advised

MICR 3922 **Microbial Biotechnology (Advanced)**
6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr A Holmes. **Session:** Semester 2. **Classes:** 2.5 hrs of lectures & 3hr prac/wk. **Prerequisites:** At least 6 credit points of MBLG units and Distinction in 6 credit points of Intermediate MICR units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED (2802 and 2807) with a Distinction in at least one of these two. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. **Prohibitions:** MICR3022, MICR3002, MICR3902. **Assessment:** One 2hr exam, in class theory assessment, continuous assessment, practical work, practical reports.
This unit is available to students who have performed well in Intermediate Microbiology and is based on MICR3022 with a series of additional lectures related to the research interests in the Discipline. Consequently, the unit of study content may change from year to year.
Textbooks
To be advised

VIRO 3001 **Virology**
6 credit points. B Hort Sc, B L W Sc, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biotechnology), B Sc (Nutrition), B Sc Agr, UG Study Abroad Program. Mrs Helen Agus. **Session:** Semester 1. **Classes:** 2hr lec/wk, 5 x 2hr tut & 6 x 4hr prac. **Assumed Knowledge:** MICR (2021 or 2921 or 2022 or 2922). **Prerequisites:** At least 6 credit points of MBLG units and at least 6 credit points in Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI or PLNT units. For BMedSc students: 42 credit points of Intermediate BMED units including BMED2802. For BScAgr students: PLNT (2001 or 2901) and MICR2024. **Prohibitions:** VIRO3901. **Assessment:** One 2hr exam, practical work, group presentations.
NB: Students are very strongly advised to complete VIRO (3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Session 2.
This unit of study is designed to introduce students who have a basic understanding of molecular biology to the field of virology. Through an examination of virus structure, genomes, replication and gene expression, viral infection in plant and animal cells is covered, progressing to examine host-virus interactions, pathogenesis, cell injury and prevention and control of infection in both eukaryotic and prokaryotic cells. Bacteriophage structure and infection of prokaryotic cells is also covered. The structure and replication of sub-viral agents: viroids and prions, and their role in disease and significance in the context of transmission via blood products are discussed. Detection of viral illness by serology and molecular techniques such as ELISA, Western blotting, PCR and sequencing will also be covered.
The hands-on practical component is designed to enhance students' practical skills and to complement the lecture series by introducing students to cell culture, cytopathic effect, serology and molecular detection techniques. Tutorials and case studies will cover specific themes and problems.
Textbooks
To be advised

VIRO 3901 **Virology (Advanced)**
6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Mrs Helen Agus. **Session:** Semester 1. **Classes:** 2.5hr lec/wk, 5 x 2hr tut & 6 x 4hr prac. **Assumed Knowledge:** MICR (2021 or 2921 or 2022 or 2922). **Prerequisites:** At least 6 credit points of MBLG units and at least 6 credit points including one Distinction in Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI or PLNT units. For BMedSc students: 42 credit points of Intermediate BMED units including Distinction in BMED2802. For BScAgr students: PLNT (2001 or 2901) and MICR2024 including one Distinction. **Prohibitions:** VIRO3001. **Assessment:** One 2hr exam, in class theory assessment, continuous assessment, practical work.
NB: Students are very strongly advised to complete VIRO (3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Session 2.
This unit is available to students who have performed well in Intermediate Microbiology and is based on VIRO3001 with a series of additional lectures related to the research interests in the Discipline. Consequently, the unit of study content may change from year to year.
Textbooks
To be advised

VIRO 3002 **Medical and Applied Virology**
6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. A/Prof Colin Harbour. **Session:** Semester 2. **Classes:** 2hr lec/wk, 2hr tut & 4hr prac/fortnight. **Assumed Knowledge:** Intermediate microbiology, immunology, molecular biology and genetics. **Prerequisites:** 6 CP MBLG units and at least 6 CP from Intermediate MICR or BCHM or BIOL or IMMU or PCOL or PHSI units. For BMedSc Students: 42 credit points of Intermediate BMED units including BMED 2807. **Assessment:** Formal examination: One 2 hr exam
Progressive assessment: 2000 w essay; tutorial case presentation, poster presentation.
NB: Students are very strongly recommended to complete VIRO(3001 or 3901) before enrolling in VIRO3002 Medical and Applied Virology in Semester 2.
This unit of study explores the way viruses invade cells, infect individual patients and spread in the community. Host/Virus interactions will also be described with a focus on the viral mechanisms that have evolved to combat and/or evade host defence systems. These features will be used to explain the symptoms, spread and control of particular human diseases ranging from the common cold to HIV. The unit will be taught by the Infectious Diseases and Immunology Unit of the Department of Medicine with the involvement of associated clinical and research experts who will contribute lectures on their own special interests and with contributions from the discipline of Microbiology. In the practical classes students will have the opportunity to develop their skills in performing and interpreting the methods currently used in diagnostic and research virology. In the tutorials emerging problems as diverse as SARS and liver cancer will be analysed in the light of the concepts and knowledge being studied in the course.
Textbooks
To be advised.

Microbiology Honours
During the Honours year, students will be involved in a research program to produce a thesis under the direction of a supervisor. A seminar at the end of the year will also be given to provide a summary of the research project. Students are also expected to broaden their general knowledge of Microbiology through attendance at research seminars and through a coursework component in their first semester which will cover diverse aspects of the subject. The coursework involves an essay as well as analysis of recently published papers in Microbiology.
An expression of interest in Honours is required from students before the Honours year, on a form to be lodged with the Honours Coordinator. Entry into the Honours year is usually dependent on an average of Credit level performance in Senior Microbiology units of study. Additionally, strong students with related training may be admitted by permission of the Head of School.

Bachelor of Science (Molecular Biology and Genetics)

Please consult degree information in chapter 2, the Tables earlier in this chapter, and the relevant Departments/Schools entries in this chapter for descriptions of units of study required for this degree.
Molecular Biology and Genetics
Molecular Biology and Genetics units of study in at Junior and Intermediate level will be taught by staff from the School of Molecular and Microbial Biosciences and the School of Biological Sciences. The Junior unit, MBLG 1001, and the Intermediate unit, MBLG2071/2971, are coordinated by the School of Molecular and Microbial Biosciences, while MBLG 2072/2972 is coordinated by the School of Biological Sciences.

MBLG 1001 **Molecular Biology and Genetics (Intro)**
6 credit points. B A, B App Sc (Ex &Sp Sc), B Sc (Nutr), B E, B Med Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Dr Hannah Nicholas. **Session:** Semester 2. **Classes:** 2 lec/wk, 1 h tut & 4 h prac/fortnight. **Assumed Knowledge:** 6 credit points of Junior Biology and 6 cp of Junior Chemistry. **Prohibitions:** AGCH 2001 or BCHM (2001 or 2101 or 2901) or MBLG (2101 or 2901 or 2001 or 2111 or 2771 or 2871). **Assessment:** One 2.5 h exam, in-semester skills test and assignments.
The lectures in this unit of study introduce the "Central Dogma" of molecular biology and genetics -i.e., the molecular basis of life. The course begins with the information macro- molecules in living cells: DNA,RNA and protein, and explores how their structures allow them to fulfill their various biological roles. This is followed by a review of how DNA is organised into genes and chromosomes leading to discussion of gene expression (transcription and translation) and replication. The unit concludes with an introduction to the techniques of molecular biology and, in particular, how these techniques have led to an explosion of interest and research in Molecular Biology. The practical component complements the lectures by exposing students to experiments which explore the measurement of enzyme activity, the isolation of DNA and the 'cutting' of DNA using restriction enzymes. However,a key aim of the practicals is to give students higher level generic skills in computing, communication, criticism, data analysis/evaluation and experimental design.
Textbooks
Malacinski,G M The Essentials of Molecular Biology (4th edition, Jones and Bartlett,2003)

MBLG 1999 **Molecular Biology & Genetics Seminar** A
0 credit points. B Sc (Molecular Biology & Genetics). **Session:** Semester 2. **Corequisites:MBLG1001.**

MBLG 2071 **Molecular Biology and Genetics A**
6 credit points. B A, B App Sc (Ex, SS and Nut), B App Sc (Ex &Sp Sc), B Sc (Nutr), B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program, UG Su. Dr Dale Hancock. **Session:** Semester 1. **Classes:** 2 lec/wk, 1 tut/ftnght, 4hr prac/ftnght. **Prerequisites:** MBLGlOOl and 12 CP of Junior Chemistry. **Prohibitions:** MBLG (2971 or 2001 or 2101 or 2901 or 2111) or PLNT2001 or AGCH2001 or BCHM (2001 or 2101 or 2901).. **Assessment:** One 2.5 hr exam, prac work, 2 assignments.
NB: Students enrolled in the combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) must have completed all Junior units for this course prior to enrolling in this unit.
This unit of study extends the basic concepts introduced in MBLGlOOl and provides a firm foundation for students wishing to continue in the molecular biosciences as well as for those students who intend to apply molecular techniques to other biological or medical questions. The unit explores the regulation of the flow of genetic information in both eukaryotes and prokaryotes. The central focus is on the control of replication, transcription and translation and how these processes can be studied and manipulated in the laboratory. Experiments in model organisms are provided to illustrate how the field has advanced, together with discussion of work carried out in human systems and the relevance to human genetic diseases. The tools of molecular biology are taught within the context of recombinant DNA-cloning - with an emphasis on essential knowledge required to use plasmid vectors to produce proteins from cloned genes, the use of genomic libraries, cDNA libraries, and methods for screening libraries. The methods of gene introduction (examples of transgenic plants and animals) are also discussed. Other techniques include PCR methodology and its use for cloning specific genes and detection of polymorphisms, separating DNA fragments by gel electrophoresis and analysis of macromolecules by Southern, Northern & Western blotting. In the genomics section, topics include assigning genes to specific chromosomes, high resolution chromosome mapping, DNA markers, physical mapping of genomes as well as DNA and genome sequencing methods and international projects in genome mapping.
The practical course complements the theory and builds on the skills learnt in MBLGlOOl. Specifically students will: use spectrophotometry for the identification and quantification of nucleic acids, explore the lac operon system for the investigation of gene expression control, perform PCR analysis As with MBLGlOOl, strong emphasis is placed on the acquisition of generic and technical skills.
Textbooks
Watson, J et al. Molecular Biology of the Gene (5th edition, Pearson, 2004)

MBLG 2971 **Molecular Biology and Genetics A (Adv)**
6 credit points. B A, B App Sc (Ex, SS and Nut), B App Sc (Ex &Sp Sc), B Sc (Nutr), B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Dr Dale Hancock. **Session:** Semester 1. **Classes:** 2 lec/wk, 1 tut/ftnght, 4hr prac/ftnght. **Prerequisites:** 12 credit points of Junior Chemistry and Distinction in MBLGlOOl. **Prohibitions:** MBLG (2071 or 2001 or 2101 or 2901 or 2111) or PLNT2001 or AGCH2001 or BCHM (2001 or 2101 or 2901).. **Assessment:** One 2.5 hr exam, prac work, 2 assignments.
NB: Students enrolled in the combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) must have completed all Junior units for this course prior to enrolling in this unit.
Extension of concepts presented in MBLG2771 which will be taught in the context of practical laboratory experiments.
Textbooks
Watson, J et al. Molecular Biology of the Gener (5th edition, Pearson, 2004)

MBLG 2072 **Molecular Biology and Genetics B**
6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 or 3 lectures per week (av 2.5 hrs). 2-3 hours prac per week (av 2.5 hrs). One tutorial every second week. **Assumed Knowledge:** One of MBLG2071, MBLG2771, MBLG2001, MBLG2871, MBLG2971, MBLG2901. **Prerequisites:** BIOL (1001 or 1101 or 1901) and MBLGlOOl and 12 credit points of Junior Chemistry. **Prohibitions:** MBLG2972, MBLG2102, MBLG2002, MBLG2902. **Assessment:** One 2 hr exam (50%), laboratory reports and quizzes (50%).
This unit of study builds on the concepts introduced in MBLG2071 and shows how modern molecular biology is being applied to the study of the genetics of all life forms from bacteria through to complex multicellular organism including plants, animals and humans. Lecture topics include classical Mendelian genetics with an emphasis on its molecular basis, cytogenetics, bacterial genetics and evolution, population genetics and molecular evolution, genomics and the techniques and applications of molecular genetics. The way in which modern molecular genetic techniques have increased our knowledge in the field of developmental biology will be examined in lectures on stem cells, transgenesis and control of gene expression.
Practical: Laboratory exercises will utilize a variety of prokaryotic and eukaryotic organisms to illustrate aspects of the lecture material, while developing familiarity and competence with equipment used in molecular techniques, microscopes, computers and statistical tests. Generic skills are developed in report writing, oral presentation, problem solving and data analysis. This is a core Intermediate unit of study in the BSc (Molecular Biology and Genetics) degree program.

MBLG 2972 **Molecular Biology and Genetics B (Adv)**
6 credit points. B A, B E, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 or 3 lectures per week (av 2.5 hrs). 2-3 hours prac per week (av 2.5 hrs). One tutorial every second week. **Prerequisites:** Distinctionin one of MBLG2071, MBLG2771, MBLG2001, MBLG2871, MBLG2971, MBLG2901. **Prohibitions:** MBLG (2072, 2102, 2002, 2902). **Assessment:** One 2 hr exam (50%), laboratory reports and quizzes (50%).
Qualified students will participate in alternative components of MBLG2072, Molecular Biology and Genetics B. The content and nature of these components may vary from year to year.

MBLG 3999 **Molecular Biology & Genetics Seminar B**
0 credit points. B Sc (Molecular Biology & Genetics). **Session:** Semester 2.

Molecular Biotechnology

The following units of study are only available to students in the Bachelor of Science (Molecular Biotechnology) degree. Please consult degree information in Chapter 2, the Tables earlier in this chapter, and the relevant Departments/Schools entries in this chapter for descriptions of other units of study required for this degree.

MOBT 2102 **Molecular Biotechnology 2**
6 credit points. B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr Rachel Codd. **Session:** Semester 2. **Classes:** 3 lee & 1 tut/wk. **Prerequisites:** 12 credit points of Junior Biology and 12 credit points of Junior Chemistry. **Prohibitions:** MOBT2001. **Assessment:** One 2 hour theory exam (70%) and in-semester assessments (30%). NB Students must pass the theory exam to pass the unit overall.
NB: This unit of study is only available to students in the BSc (Molecular Biotechnology).
The main purpose of this unit of study is to introduce students to the core concepts of modern molecular biotechnology and build a base for future study in this discipline. It assumes students will have knowledge of Molecular Biology and Genetics through previous study of MBLGlOOl and MBLG2771/2871 and concurrent study of MBLG2072/2972. It commences with an introduction to the biotechnology revolution and its impact worldwide. Students are then introduced to how large biomolecules are exploited in drug discovery with discussions of structural diversity in macromolecules, the construction of synthetic peptide and oligonucleotide combinatorial libraries, the uses and screening of such libraries in drug discovery together with examples from industry. This unit proceeds with considerations of the chemical synthesis of pharmaceuticals to specific drug targets. Structure-activity relationships, the use of biomolecules such as proteins versus natural products in drug design, the role of DNA as a drug target, and the importance of metals ions are all discussed together with case studies from industry. Issues associated with pharmaceutical stability and metabolism are then described. The unit concludes with an overview of the commercialization of discoveries in science with consideration given to the role of researchers, university and industry interactions, and regulatory and patent issues. This is followed by an appreciation of the societal impact and ethics of biotechnology, including how the industry and researchers interact with, and inform, the public. Guest lecturers will contribute to these presentations to help students develop an appreciation of emerging areas in molecular biotechnology from a broad perspective.
Textbooks
Molecular Biotechnology: Principles and Applications of Recombinant DNA, Bernard R. Glick and Jack J. Pasternak, 3rd Edition, 2003, ASM Press, Washington, ISBN 1-55581-224-4 (hardcover) or ISBN 1-55581-269-4 (paperback)

MOBT 3101 **Molecular Biotechnology 3A**
6 credit points. B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr. Neville Firth. **Session:** Semester 1. **Classes:** 3 lee & 1 tut/wk. **Assumed Knowledge:** MBLG (2072 or 2972). **Prerequisites:** MOBT2102. **Prohibitions:** MOBT2002. **Assessment:** One 2 hour theory exam (70%) and in-semester assessments (30%). Students must pass the theory exam to pass the unit overall.
NB: NB: This unit of study is only available to students in the BSc (Molecular Biotechnology).
This unit of study builds on MOBT 2102 and to expand concepts and applications of modern molecular biotechnology. It assumes students have previously been taught molecular biology and genetics through MBLG 2072/2972. It commences with the synthesis of commercial products by recombinant microorganisms, including small biological molecules, antibiotics, polymers, nucleic acids and proteins, then leads onto large-scale production of proteins from recombinant microorganisms. Students will be introduced to scaled-up microbial growth and bioreactors, combined with typical large-

scale fermentation systems and downstream processing. This will be broadened to an appreciation of yeast and mammalian cells in large-scale production. Examples of major protein-based therapeutics will be examined in detail. The unit introduces students to genome sequencing and technologies, and follows with the impact of proteomics in identifying new drug targets and therapeutics, its interplay with genomics, disease states, quantitative vs. qualitative profiles, and the role of bioinformatics in data and database management. The role of protein structure on function and the engineering of protein structures in briefly described. Agricultural and environmental biotechnology is introduced with a focus on promoting plant growth, the utilization of starch and cellulose, the application of enzymes in food processing, bioremediation strategies and green manufacturing technologies, and the impact heavy metals and pesticides on the environment. Issues facing start-up companies and the commercialization of discoveries complete the unit.

Textbooks

"Molecular Biotechnology: Principles and Applications of Recombinant DNA", Bernard R. Glick and Jack J. Pasternak, 3rd Edition, 2003, ASM Press, Washington, ISBN 1-55581-224-4 (hardcover) or ISBN 1-55581-269-4 (paperback)

MOBT 3102 **Molecular Biotechnology 3B**

6 credit points. B Sc (Molecular Biotechnology), UG Study Abroad Program. Dr Kevin Downard. **Session:** Semester 2. **Classes:** 2 lee, 1 tut/wk & 25 hrs industry related project over the semester. **Prerequisites:** MOBT2002 or MOBT3101. **Prohibitions:** MOBT3002. **Assessment:** Presentation, project report and theory exam.

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

This Senior unit of study builds on the knowledge gained in earlier units of modern molecular biotechnology. It emphasises applications of molecular biotechnology including product design, research and development, and the importance of recognising industry trends. This will typically involve detailed industry case studies, on-site visits, and interactions with industry partners in association with university staff. Lectures will address emerging tools in the discovery and application of molecular biotechnology. To maximize future opportunities, students will learn about funding and research and development models, partly through Australian or overseas case studies. Guest lecturers will contribute and help students develop an appreciation of emerging areas in molecular biotechnology.

As well as industry-relevant experience, subject areas include biotech company success stories, techniques in molecular biotechnology and drugs from natural products.

Textbooks

"Molecular Biotechnology: Principles and Applications of Recombinant DNA", Bernard R. Glick and Jack J. Pasternak, 3rd Edition, 2003, ASM Press, Washington, ISBN 1-55581-224-4 (hardcover) or ISBN 1-55581-269-4 (paperback)

School of Molecular and Microbial Biosciences

The School brings together Biochemistry, Microbiology, Molecular Biotechnology and Nutrition, with separate study codes BCHM, MICR, MOBT [see Table IE for details of the BSc (Molecular Biotechnology)] and NUTR [see Table IF for details of the BSc (Nutrition)]. Significant contributions are also made to the Intermediate faculty units of study in Molecular Biology and Genetics with study code MBLG.

Unit descriptions

Unit descriptions are located under separate headings in this chapter:
-Biochemistry
-Microbiology
-Molecular Biotechnology
-Molecular Biology and Genetics
-Nutrition.

Location

The School is located in the Biosciences Building (G08), across City Road in the Darlington area behind the Wentworth Building.

Nanoscience and Technology

Nanoscience and Technology is an interdisciplinary major offered within the BSc. It is directed at students interested in understanding the emerging science of working and building at and near the molecular level. It incorporates study of the fundamental sciences in order to understand the structure of matter, as well as technological elements of the mechanical properties of materials. Students undertaking this major are strongly encouraged to take suitable units from the Faculty of Engineering in combination with Physics and Chemistry.

A student seeking to complete this major should study Physics and Chemistry in their Junior and Intermediate years together with some Engineering and Mathematics. In the Senior year it is possible to focus on two of the three discipline areas, or to continue to study elements of all three. This major may also be seen as a complement to a traditional major in Chemistry or Physics. Refer to Table 1 for an enrolment guide and to entries under the contributing schools and departments for unit descriptions. Engineering units are described in the Engineering Handbook.

Neuroscience

Coordinator: Dr Karen Cullen (Anatomy) kcullen@anatomy.usyd.edu.au

Neuroscience encompasses a diverse range of disciplines that cross traditional subject boundaries. The study of Neuroscience ranges from anatomy to neuronal function; the cellular and molecular biology of the neuron to the complex phenomena of perception; emotion and memory; from the regulation of breathing and blood pressure to movement; developing to ageing; normal cognition to neurodegeneration.

A major in Neuroscience is designed to provide a foundation in the basic biology of the brain as well as the fundamentals of cognition. Students are able to focus their cross-disciplinary studies with a molecular, cellular, anatomical and behavioural concentration. Refer to Table I for an enrolment guide and to entries in specific subject areas for Unit of Study descriptions. A cross-disciplinary major requires careful selection of subjects to fulfill the requirements of the major.

Research in Neuroscience is vibrant and an international priority area. There are many opportunities for high-achieving students to undertake honours study within the field of Neuroscience. Honours projects are typically undertaken within individual departments: Physiology, Anatomy, Pharmacology, Psychology, Pathology and associated institutes. Students should canvass respective departments during their senior studies for details of projects, admission criteria and enrolment details.

Nutrition

The Human Nutrition Unit in the School of Molecular and Microbial Biosciences offers units of study to students in the Bachelor of Science (Nutrition) degree. Please consult degree information in Chapter 2, and Table IF earlier in this chapter, and the relevant Departments/Schools entries in this chapter for descriptions of other units of study required for this degree.

NUTR 2911 **Food Science Introductory (Advanced)**

6 credit points. B App Sc (Ex, SS and Nut), B App Sc (Ex &Sp Sc), B Sc (Nutr), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. Dr Kim Bell-Anderson. **Session:** Semester 1. **Classes:** 2 lectures, 3 prac/wk. **Prerequisites:** MBLG 1001 and CHEM (1001 or 1101 or 1901 or 1903 or 1909) and CHEM (1002 or 1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1003 or 1902 or 1903).

For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree completion of all Junior units in the table of units for this course. **Prohibitions:** NUTR2901. **Assessment:** One 3hr exam, one assignment, five prac reports.

Foods as commodities: Food use around the world, including the origin, history, cultural and nutritional importance of each the following major human foods.

Food Behaviour: Physical and chemical composition of various commodities, Behaviour and function of the commodity during culinary processes, spoilage of the commodity.

Geography of foods: Understanding of the global food distribution, food abundance and food scarcity, the problems of nutrition in very poor countries and the potential of food aid to minimise food problems.

Macronutrients: Energy, protein, fat, carbohydrate, fibre, water, alcohol consumption patterns, requirements for health, absorption, metabolism and health/disease significance.

Practical: Organoleptic assessment of food: vision, smell, taste and tactile. Food flavour, texture and consistency. Enzymic and non-enzymic browning in foods: desirable versus undesirable browning reactions. Vegetables and fruits. Carbohydrate foods, dairy products, fats and oils, meat and poultry, fish and shellfish.

Textbooks

Mann J, Truswell AS (eds). Essentials of Human Nutrition. Oxford: OUP, 2002
Griswald N. The Experimental Study of Foods.

NUTR 2912 **Nutritional Science Introductory (Adv)**

6 credit points. B App Sc (Ex, SS and Nut), B App Sc (Ex &Sp Sc), B Sc (Nutr), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. A/Prof Samir Samman. **Session:** Semester 2. **Classes:** 2 lectures, 3 prac/wk. **Assumed Knowledge:** NUTR2911. **Prerequisites:** MBLG1001 and CHEM (1001 or 1101 or 1901 or 1903 or 1909) and CHEM (1002 or 1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1101 or 1901) and BIOL (1002 or 1003 or 1902 or 1903). For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree completion of all Junior units in the table of units for this course. **Prohibitions:** NUTR2902. **Assessment:** One 3hr exam, one assignment, five prac reports.

Vitamins: Consumption patterns, requirements for health, absorption, metabolism, nutritional/disease significance, deficiency state in regard to Vitamins A, Bl, B2, B6, B12, niacin, folate, biotin, pantothenic acid, Vitamin C, Vitamin D, Vitamin E, Vitamin K. Minerals and trace elements. Consumption patterns, requirements for health, absorption, metabolism, nutritional/disease significance, deficiency state in regard to calcium, iron, sodium, potassium, zinc, selenium, copper, carnitine, choline.
Food Science and Technology: Principles of food preservation, Cereal technology, Milk and dairy technology, Fat and oil technology, Sugar technology, Meat technology, Processing and nutrient changes, Food legislation, Food additives, Naturally-occurring toxicants, Food pollutants, Food safety, Food Hygiene, Food microbiology, Food hygiene, Critical control points and hazards analysis.
Practical: Students will collect 24 hour food intake on themselves. Students will homogenise all foods eaten in a 24 hour period, sample representatively and analyse energy content by bomb calorimetry and determine fat and fatty acid composition, protein, starch, total sugars, dietary fibre and selected vitamins and minerals. They will report the finding to the whole class in the final practical.
Textbooks
Mann J, Truswell AS (2002). Essentials of human nutrition. Oxford University Press, Oxford.
Proudlove RK The Science & Technology of Foods. Forbes London, 1985.
Hobbs BC Food poisoning and food hygiene. (5th ed) Ballimore, Mad; E. Arnold 1987.

NUTR 3911 **Nutritional Assessment Methods**

6 credit points. B Sc (Nutrition), UG Study Abroad Program. Dr Karen Webb. **Session:** Semester 1. **Classes:** 2hr lec,lhr tut, 2hr prac/wk. **Prerequisites:** NUTR2911 and NUTR2912. **Prohibitions:** NUTR3901. **Assessment:** 1 assignment, 3 practical reports, 3 tutorial papers.
Basic concepts in nutritional status; four methods of dietary assessment in individuals, advantages and limitations; validation of dietary methods; nutritional guidelines, targets and recommended dietary intakes; computerized nutrient analysis; limitations of food composition analysis. Behavioural influences on food intake. Nutritional assessment of individuals through clinical examination and commonly used laboratory biochemical tests for nutritional status; methods used to diagnose nutritional deficiencies; specificity, reliability of biochemical tests. Anthropometry and body composition; soft tissue measurement; percent body fat; reference standards; growth standards and percentiles.
Textbooks
Principles of Nutritional Assessment. R.S. Gibson, Oxford University Press, New York, 1990.
Nutritional Assessment. A Laboratory Manual. RS Gibson, Oxford University Press, New York, 1993.

NUTR 3912 **Community and Public Health Nutrition**

6 credit points. B Sc (Nutrition), UG Study Abroad Program. Ms SoumelaAmanatidis. **Session:** Semester 2. **Classes:** 3hr lee, 2hr prac/wk. **Prerequisites:** NUTR2911 and NUTR2912. **Prohibitions:** NUTR3902. **Assessment:** One 1 hr exam, 3 assignments.
This unit of study covers topics such as nutrition through the Life cycle from infancy to old age; nutrition in vulnerable groups such as low income groups, indigenous populations and homeless youth and theories of food habits It helps students gain skills and knowledge in planning, implementing and evaluating nutrition health promotion programs for various population groups. Topics covered include, principles of health promotion, effective nutrition promotion strategies, program evaluation and program planning. It also looks at current public health nutrition strategies for promoting health and preventing diet related diseases. The delivery of material involves lectures, tutorials and workshops.
Textbooks
Hawe P, Degeling D and Hall J. Evaluating Health Promotion: A health worker's guide. McLennan and Petty, 1990. ISBN: 086 4330677.
Germov J and Williams L (Editors). A Sociology of Food and Nutrition (The Social Appetite). 2nd Edition, Oxford University Press, 2004. ISBN: 019550609.
Mann J & Truswell AS, Essentials of Human Nutrition. Oxford University Press, 2002. ISBN: 0-19-262756-2.

NUTR 3921 **Methods in Nutrition Practice**

6 credit points. B Sc (Nutrition), UG Study Abroad Program. Ms SoumelaAmanatidis. **Session:** Semester 1. **Classes:** 2hr lee, 3hr prac/wk. **Prerequisites:** NUTR2911 and NUTR2912. **Prohibitions:** NUTR3901. **Assessment:** One 2 hr exam.
Basic concepts in nutritional epidemiology, advantages and limitations of epidemiological methods; biological markers of chronic disease; use of bio statistical tools in epidemiology; critical interpretation of published data. Research design and statistics.
Textbooks
Willett WC. Nutritional epidemiology. Oxford University Press 1990.

NUTR 3922 **Nutrition and Chronic Disease**

6 credit points. B Sc (Nutrition), UG Study Abroad Program. Ms SoumelaAmanatidis. **Session:** Semester 2. **Classes:** 3hr lee, 2hr workshop/wk. **Prerequisites:** NUTR2911 and NUTR2912. **Prohibitions:** NUTR3902. **Assessment:** One 2 hr exam, 2 assignments.
This unit of study examines the relationship and evidence for the role of nutrition in the etiology of chronic diseases such as cancer, coronary heart disease, hypertension, obesity,dental caries and osteoporosis. It also investigates the current nutrition policies and guidelines that are aimed at preventing these diseases at a population level. These include National Dietary Guidelines, Recommended Dietary Intakes, food legislation and Commonwealth and State food policies. Students will also get an opportunity to examine the current popular fad diets on the market. There is also a section on developing communication skills for promoting positive nutrition messages using the media. The delivery of material involves lectures, tutorials and workshops.
Textbooks
Mann J & Truswell AS, Essentials of Human Nutrition. Oxford University Press, 2002. ISBN: 0-19-262756-2.
Bauer K and Sokokil C. Basic Nutrition Counselling Skills. Wadsworth, 2002. ISBN: 0727 916645.

Nutrition Honours

A/Prof S Samman; Ms Beth Rohrlach
Students who have completed the three year Bachelor (Nutrition) may complete an honours year in either the clinical strand, or by research. Students who want accreditation as a dietician will need to complete the clinical strand.
Clinical Nutritional Science and Dietetics
Students in this strand enrol in and complete:
NUTR 4001 Clinical Nutritional Science A
NUTR 4002 Clinical Nutritional Science B
The contact hours per week are a minimum of 15 and during intensive practicals will be 35. With problem based learning it is expected that a student will need to spend minimum of 20 h in self-directed learning.
At the completion of this course students will be able:
* to describe the pathophysiology and biochemistry of disease processes where nutrition is an important part of prevention and/or treatment;
* to construct appropriate treatment regimes and prevention strategies for these diseases using their nutritional science knowledge.
Nutrition Research
Students in this strand enrol in and complete:
NUTR 4101 Nutrition Research A
NUTR 4102 Nutrition Research B
NUTR 4103 Nutrition Research C
NUTR 4103 Nutrition Research D
Students will be involved in full-time research under the supervision of a staff member within the Human Nutrition Unit or a cognate department. During the year, students will be required to:
(i) carry out a supervised research project;
(ii) present a written project proposal and present orally a brief literature survey and aims of the project;
(iii) write an essay based on the project; and
(iv) deliver a seminar on the project.
Students will prepare a project proposal, which should outline the aims, significance and background of the project, including an indication of the relationship of the project to the work of others, citing key references (not to be included in the 1000 word limit) where appropriate. A brief outline of methods and techniques to be used.

Pharmacology

This Department offers a general training in Pharmacology to students in the Faculty of Science. It provides two Intermediate 6-credit point units of study and four Senior 12-credit point units of study.

PCOL 2011 **Pharmacology Fundamentals**

6 credit points. B Sc, B Sc (Bioinformatics), B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program. Dr Jonathon Arnold. **Session:** Semester 1. **Classes:** 3 lectures/wk, 8 PBL tutorials/semester, 5 lab sessions/semester. **Prerequisites:** 6 credit points of Junior Chemistry and 6 credit points of Junior Biology. **Prohibitions:** PCOL2001. **Assessment:** One 2 hr exam, four 20 question WebMCQ quizzes, three lab reports, four 1 page research topics.
NB: The completion of 6 credit points ofMBLG units of study is highly recommended.
This unit of study examines four basic areas in Pharmacology: (1) principles of drug action (2) pharmacokinetics and drug metabolism (3) autonomic and endocrine pharmacology, and (4) drug design. The delivery of material involves lectures, practicals, computer-aided learning and problem-based tutorials. Practical classes provide students with the opportunity of acquiring technical experience and teamwork skills. Problem-based tutorials are based on real-life scenarios of drug use in the community. These tutorials require students to integrate information obtained in lectures in order to provide

solutions to the problems. Online quizzes accompany each module for self assessment.
Textbooks
Rang HP, Dale MM, Ritter JM & Moore PK, Pharmacology. 5th edn, Churchill Livingstone, 2003.
Study aid:
Neal MJ, Medical Pharmacology at a Glance. 4th edn, Blackwell Science, 2002
Reference books
Goodman and Gilman's The Pharmacological Basis of Therapeutics 10th edn, editors JG Hardman,
LELimbird, 2001.
Patrick GL, An Introduction to Medicinal Chemistry 2nd edn, Oxford Uni press, 2001.

PCOL 2012 **Pharmacology: Drugs and People**

6 credit points. B Sc, B Sc (Bioinformatics), B Sc (Nutrition), UG Study Abroad Program. Dr B McParland. **Session:** Semester 2. **Classes:** 3 lectures/week, 8 PBL tutorials/semester, 5 lab sessions/semester. **Assumed Knowledge:** PCOL2011. **Prerequisites:** 6 credit points of Junior Chemistry and 6 credit points of Junior Biology. **Prohibitions:** PCOL (2002 and 2003).. **Assessment:** One 2 hr exam, four 20 question WebMCQ quizzes, three lab reports.
NB: The completion of 6 credit points ofMBLG units of study is highly recommended.
This unit of study examines four important areas of Pharmacology: (1) drug action in the nervous system (2) drug discovery and development (3) pharmacotherapy of inflammation, allergy and gut disorders, and
(4) drugs of recreation, dependence and addiction. The delivery of material involves lectures, practicals, computer-aided learning and problem-based tutorials. Practical classes provide students with the opportunity of acquiring technical experience and teamwork. Problem-based tutorials are based on real-life scenarios of drug use in the community. These tutorials require students to integrate information obtained in lectures in order to provide solutions to the problems. Online quizzes accompany each module.
Textbooks
Rang HP, Dale MM, Ritter JM & Moore PK, Pharmacology. 5th edn, Churchill Livingstone, 2003.
Study aid:
Neal MJ, Medical Pharmacology at a Glance. 4th edn, Blackwell Science, 2002
Reference books
Goodman and Gilman's The Pharmacological Basis of Therapeutics 10th edn, editors JG Hardman,
LELimbird, 2001.

PCOL 3011 **Toxicology**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. A/Prof Ian Spence. **Session:** Semester 1. **Classes:** 2 lee, 3 tut/prac per wk. **Prerequisites:** PCOL2001 or PCOL2011 and PCOL2012 or 36 credit points from Intermediate BMED units of study. **Prohibitions:** PCOL3001, PCOL3901, PCOL3911. **Assessment:** One 2hr exam, in class quizzes, assignments.
This unit of study is designed to introduce students with a basic understanding of pharmacology to the discipline of toxicology. The unit considers the toxicology associated with therapeutic drugs (adverse drug reactions) and the associated issue of drug interactions. The pharmacogenetic basis of adverse reactions is also considered. The unit also considers aspects of environmental toxicology, particularly toxic reactions to environmental agents such as asbestos and pesticides. As part of the unit students are introduced to basic ideas about the collection and analysis of data from human populations, both in the structured situation of clinical trials and in analysis of retrospective data.
Textbooks
Klaasen, Curtis D. (2001) Casarett and Doull's Toxicology. 6th edition. McGraw Hill.

PCOL 3911 **Toxicology (Advanced)**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. A/Prof. Ian Spence. **Session:** Semester 1. **Classes:** 2 lec/wk, 3 tut/prac per week. **Prerequisites:** Distinction average in PCOL2011 and PCOL2012 or Distinction average in 36 credit points from Intermediate BMED units of study. **Prohibitions:** PCOL3001, PCOL3901, PCOL3011. **Assessment:** One 2hr exam, in class quizzes, assignments.
This unit will consist of the lecture and practical components of PCOL3011. Students will be set special advanced assignments related to the material covered in core areas. These may also involve advanced practical work or detailed investigation of a theoretical problem.
Textbooks
Klaasen, Curtis D. (2001) Casarett and Doull's Toxicology. 6th edition. McGraw Hill.

PCOL 3012 **Drug Design and Development**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. A/Prof Robin Allan. **Session:** Semester 1. **Classes:** 2 lec/wk, 3 tut/prac per wk. **Prerequisites:** PCOL2001 or PCOL2011 and PCOL2012 or 36 credit points from Intermediate BMED units of study. **Prohibitions:** PCOL3001, PCOL3901, PCOL3912. **Assessment:** One 2hr exam, in class quizzes, assignments.
This unit of study is designed to introduce students with a basic understanding of pharmacology to the field of medicinal chemistry associated with drug design, development and registration. It covers the main aspects of drug discovery and development by outlining the main considerations, and illustrates these using examples which include COX-2 inhibitors, statins, and viagra. The role of computers in drug design is emphasised by classwork and assignments on molecular modelling and structure-activity relationships. The course also extends to a section on the design of diverse pharmacological agents which include compounds for imaging by positron emission tomography (PET), as well as chemical and biological warfare agents, and riot control agents.
Textbooks
Patrick, Graham L. (2005) An Introduction to Medicinal Chemistry. 3rd edition. Oxford University Press.

PCOL 3912 **Drug Design and Development (Adv)**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. A/Prof. Robin Allan. **Session:** Semester 1. **Classes:** 2 lec/wk, 3 tut/prac per wk. **Prerequisites:** Distinction average in PCOL2011 and PCOL2012 or Distinction average in 36 credit points from Intermediate BMED units of study. **Prohibitions:** PCOL3001, PCOL3901, PCOL3012. **Assessment:** One 2hr exam, in class quizzes, assignments.
This unit will consist of the lecture and practical components of PCOL3012. Students will be set special advanced assignments related to the material covered in core areas. These may also involve advanced practical work or detailed investigation of a theoretical problem.
Textbooks
Patrick, Graham L. (2005) An Introduction to Medicinal Chemistry. 3rd edition. Oxford University Press.

PCOL 3021 **Drug Therapy**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. Prof. Graham Johnston. **Session:** Semester 2. **Classes:** 2 lec/wk, 3 tut/prac per week. **Prerequisites:** PCOL2011 and PCOL2012 or 36 credit points from Intermediate BMED units of study. **Prohibitions:** PCOL3002, PCOL3902, PCOL3921. **Assessment:** One 2hr exam, in class quizzes, assignments.
This unit of study is designed to introduce students with a basic understanding of pharmacology to the theory and practice of drug therapy in the treatment of major disorders such as asthma, cancer and hypertension.
Textbooks
H.P Rang, M.M. Dale, J.M. Ritter and PK. Moore: Pharmacology, 5th edn (Churchill Livingstone, 2003)

PCOL 3921 **Drug Therapy (Advanced)**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. Professor Graham Johnston. **Session:** Semester 2. **Classes:** 2 lec/wk, 3 tut/prac per wk. **Prerequisites:** Distinction average in PCOL2011 and PCOL2012 or in 36 credit points from Intermediate BMED units of study. **Prohibitions:** PCOL3002, PCOL3902, PCOL3021. **Assessment:** One 2hr exam, in class quizzes, assignments.
Advanced students will complete the same core lecture material as students in PCOL3021 but carry out advanced level elective projects, practicals and tutorials.
Textbooks
H.P. Rang, M.M. Dale, J.M. Ritter and PK. Moore: Pharmacology, 5th edn (Churchill Livingstone, 2003)

PCOL 3022 **Neuropharmacology**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. Prof. Graham Johnston. **Session:** Semester 2. **Classes:** 2hr lec/wk, 3hr tut/prac/wk. **Prerequisites:** PCOL2011, PCOL2012 or 36 credit points from Intermediate BMED units of study. **Prohibitions:** PCOL3002, PCOL3902, PCOL3922. **Assessment:** One 2hr exam, in-classes quizzes, assignments.
This unit of study is designed to introduce students with a basic understanding of pharmacology to the theory and practice of neuropharmacology in the treatment of neurological disorders such as Alzheimer's disease, epilepsy, depression, insomnia, pain, schizophrenia and stroke.
Textbooks
H.P. Rang, M.M. Dale, J.M. Ritter and PK. Moore: Pharmacology, 5th edn (Churchill Livingstone, 2003).

PCOL 3922 **Neuropharmacology (Advanced)**

6 credit points. B Med Sc, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. Prof. Graham Johnston. **Session:** Semester 2. **Classes:** 2 lec/wk, 3 tut/prac per wk. **Prerequisites:** Distinction average in PCOL2011 and PCOL2012 or in 36 credit points from Intermediate BMED units of study. **Prohibitions:** PCOL3002, PCOL3902, PCOL3022. **Assessment:** 2 lec/wk, 3 tut/prac/week.
Advanced students will complete the same core lecture material as PCOL3022 Neuropharmacology but carry out advanced level elective projects, practicals and tutorials.
Textbooks
As for PCOL3022

Pharmacology Honours

Dr Jasmine Henderson.
Subject to a satisfactory standard being attained in Pharmacology, a student may arrange to read for the Honours degree in this subject area. Much of the work will be arranged to suit the interest of the individual. The student will participate in a research project in progress in the Discipline. A research plan, literature review and a 50-page thesis on the research project must be prepared. Seminars on the literature review, the project and another chosen topic will be given by the student.

Physics

The School of Physics provides undergraduate units of study in Physics at Junior, Intermediate, Senior and Honours levels. Appropriate unit of study choices are available for candidates who wish to major in Physics, to proceed to Honours in Physics, or to combine Physics with a major in another subject area. Several other Faculties and Departments within the Faculty of Science require that Junior Physics be taken as part of the students' preparation for later studies in their more specialised fields. Similarly, Intermediate Physics units of study are taken by many Faculty of Engineering students, as well as by many Faculty of Science students who intend to major in other subjects.

The School of Physics also provides units of study in Computational Science at Junior, Intermediate, Senior and Honours levels. For details see the Computational Science entry.

Location

Physics Junior units of study: lectures in Physics Building, laboratories in Carslaw Building.

Physics Intermediate, Senior and Honours units of study: Physics Building.

Information

On noticeboards in the Physics Building as appropriate for each unit of study and outside the Physics Student Support Office (Room 202, ground floor, Physics Building), and also at the School of Physics website: www.physics.usyd.edu.au.

Registration

Junior units of study: In assigned laboratory sessions during the second week of each semester.

Intermediate units of study: At first lecture, in the Physics Building.

Senior units of study: At first lecture, in the Physics Building.

Advice on units of study

A member of the Physics staff is normally present among Faculty advisers during enrolment week to advise students. The Physics Student Support Office, Room 202, Physics Building, will arrange for students to meet advisers at other times. Further information about the School of Physics and its teaching program are available at www.physics.usyd.edu.au and on WebCT.

Physics Junior units of study

Dr John O'Byrne

There are seven different semester length units of study offered at the Junior level.

First semester

PHYS 1001 (Regular)
PHYS 1002 (Fundamentals)
PHYS 1901 (Advanced)

Second semester

PHYS 1003 (Technological)
PHYS 1004 (Environmental and Life Sciences)
PHYS 1902 (Advanced)
PHYS 1500 (Astronomy)

Completion of one unit of study in each semester provides a solid foundation for further studies in Physics in higher years. PHYS 1500 Astronomy cannot be counted towards the 12 credit points of Junior Physics needed as a prerequisite for Intermediate Physics. Each unit of study has a laboratory component. The first semester laboratory work provides an introduction to experimental techniques while reinforcing concepts of physics introduced in lectures. In second semester the laboratory work provides an introduction to electrical circuits and offers students the opportunity to design and undertake short experimental projects.

Information booklet

Further information about Junior Physics units of study is contained in a booklet for intending commencing students available at enrolment or during O-Week or from the Physics Student Support Office (Room 202, ground floor, Physics Building (A28)). It is also available on the School of Physics website at www.physics.usyd.edu.au

PHYS 1001 **Physics 1 (Regular)**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Med Sc, B Sc, B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 1. **Classes:** Three 1hr lectures, one 3hr laboratory, one 1hr tutorial. **Assumed Knowledge:** HSC Physics. **Corequisites:** Recommended concurrent Units of Study: MATH (1001/1901, 1002/1902). **Prohibitions:** PHYS (1002 or 1901). **Assessment:** Laboratory (20%), assignments (10%), progressive test (5%), skills test (5%), examination (60%).

This unit of study is for students who gained 65 marks or better in HSC Physics or equivalent. The lecture series contains three modules on the topics of mechanics, thermal physics and waves.

Textbooks

Young & Freedman. University Physics. 11th edition, Addison-Wesley. 2004
Experimental Physics Laboratory Manual - School of Physics Publication.

PHYS 1002 **Physics 1 (Fundamentals)**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Med Sc, B Sc, B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 1. **Classes:** Three 1hr lectures, one 3hr laboratory, one 1hr tutorial. **Assumed Knowledge:** No assumed knowledge of Physics. **Corequisites:** Recommended concurrent Units of Study: MATH (1001/1901, 1002/1902). **Prohibitions:** PHYS (1001 or 1901). **Assessment:** Laboratory (20%), assignments (5%), progressive tests (10%), examination (65%).

This unit of study is designed for students who have not studied Physics previously or scored below 65 in HSC Physics. The lecture series contains modules on the language of physics, mechanics and waves.

Textbooks

Hecht, E. Physics: Calculus, 2nd edition, Brooks/Cole 2000
Experimental Physics Laboratory Manual - School of Physics Publication.

PHYS 1003 **Physics 1 (Technological)**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Med Sc, B Sc, B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 2. **Classes:** Three 1hr lectures, one 3hr laboratory, one 1 hr tutorial. **Assumed Knowledge:** HSC Physics or PHYS (1001 or 1002 or 1901) or equivalent. **Corequisites:** Recommended concurrent Units of Study: MATH (1003/1903). MATH (1005/1905) would also be useful.. **Prohibitions:** PHYS (1004 or 1902). **Assessment:** Laboratory (25%), assignments (10%), examination (65%).

NB: It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit

This unit of study is designed for students majoring in physical and engineering sciences and emphasis is placed on applications of physical principles to the technological world. The lecture series contains modules on the topics of fluids, electromagnetism, and quantum physics.

Textbooks

Young & Freedman. University Physics, 11th edition, Addison-Wesley. 2004
Experimental Physics Laboratory Manual - School of Physics Publication.

PHYS 1004 **Physics 1 (Environmental & Life Science)**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Med Sc, B Sc, B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 2. **Classes:** Three 1hr lectures, one 3hr laboratory, one 1hr tutorial. **Assumed Knowledge:** HSC Physics or PHYS (1001 or 1002 or 1901) or equivalent. **Corequisites:** Recommended concurrent Units of Study: MATH (1003/1903). MATH (1005/1905) would also be useful.. **Prohibitions:** PHYS (1003 or 1902). **Assessment:** Laboratory (25%), assignments (10%), examination (65%).

NB: It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit

This unit of study has been designed specifically for students interested in further study in environmental and life sciences. The lecture series contains modules on the topics of properties of matter, electromagnetism, and radiation and its interactions with matter.

Textbooks

Hecht, E. Physics: Calculus, 2nd edition, Brooks/Cole 2000.
Experimental Physics Laboratory Manual - School of Physics Publication.

PHYS 1500 **Astronomy**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 2. **Classes:** Three 1hr lectures, one 2hr laboratory, one 1hr tutorial. **Assumed Knowledge:** No assumed knowledge of Physics. **Assessment:** Laboratory (25%), essay (15%), tutorials (5%), night viewing project (5%), examination (50%).

This unit of study provides a broad understanding of the structure, scale and diversity of the universe and an appreciation of the scientific methods used to achieve this understanding. Current areas of investigation, new ideas and concepts which often receive wide media attention will be used to demonstrate how science attempts to understand new and remote phenomena and how our ideas of our place in the universe are changing. The range of topics includes the planets, the solar system and its origin, spacecraft discoveries, stars, supernovas, black holes, galaxies, quasars, cosmology and the Big Bang. It also includes day and night sky observing sessions. This unit of study cannot be counted as part of the 12 credit points of Junior Physics necessary for enrolment in Intermediate Physics.

Textbooks

Seeds MA. Horizons: Exploring the Universe. 9th edition, Brooks/Cole 2005
Astronomy Computer Exercises - School of Physics Publication.

PHYS 1901 **Physics 1A (Advanced)**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Med Sc, B Sc, B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 1. **Classes:** Three 1hr lectures, one 3hr laboratory, one 1hr tutorial. **Prerequisites:** UAI of at least 96, or HSC Physics result in Band 6, or PHYS 1902, or Distinction or better in PHYS (1003 or 1004) or an equivalent unit. **Corequisites:** Recommended concurrent Units of Study: MATH (1001/1901,1002/1902).. **Prohibitions:** PHYS (1001 or 1002). **Assessment:** Laboratory (20%), assignments (10%), progressive test (5%), skills test (5%), examination (60%).

This Unit of Study is intended for students who have a strong background in Physics and an interest in studying more advanced topics. It proceeds faster than Physics 1 (Regular), covering further and more difficult material. The lecture series contains modules on the topics of mechanics, thermal physics, waves and chaos. The laboratory work also provides an introduction to computational physics using chaos theory as the topic of study.
Textbooks
Young and Freedman. University Physics, 11th edition, Addison-Wesley. 2004.
Experimental Physics Laboratory Manual - School of Physics Publication.

PHYS 1902 **Physics IB (Advanced)**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Med Sc, B Sc, B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), UG Study Abroad Program. **Session:** Semester 2. **Classes:** Three Ihr lectures, one 3hr laboratory, one Ihr tutorial. **Prerequisites:** UAI of at least 96, or HSC Physics result in Band 6, or PHYS 1901, or Distinction or better in PHYS (1001 or 1002) or an equivalent unit. **Corequisites:** Recommended concurrent unit of study: MATH (1003/1903). MATH 1005/1905 would also be useful.. **Prohibitions:** PHYS (1003 or 1004). **Assessment:** Laboratory (25%), assignments (10%), examination (65%).
NB: It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit
This unit of study is a continuation of Physics 1A (Advanced). Students who have completed PHYS 1001 or PHYS 1002 at Distinction level may enrol. It proceeds faster than Physics 1 (Technological), covering further and more difficult material. The lecture series contains modules on the topics of fluids, electricity and magnetism, and quantum physics.
Textbooks
Young & Freedman. University Physics, 11th edition, Addison-Wesley. 2004.
Experimental Physics Laboratory Manual - School of Physics Publication.

Physics Intermediate units of study

Dr Gordon Robertson
In common with the rest of the Faculty of Science, Intermediate Physics has been restructured into 6-credit point units, starting in 2005. There will be three units at the Normal level and three at the Advanced level:
- PHYS2011/2911 Physics 2A (Normal/Advanced) - Semester 1
- PHYS2012/2912 Physics 2 B (Normal/Advanced) - Semester 2
- PHYS2013/2913 Astrophysics and Relativity (Normal/Advanced) - Semester 2

Students intending to major in Physics are strongly encouraged to take all three. The Advanced versions can be taken by students who have achieved a Credit or better in their previous Physics units.
Progression to Senior Physics: The prerequisites for all Senior Physics units except PHYS3022/3922 (Astrophysics/High Energy Physics) are PHYS2011/2911 and PHYS2012/2912. Students intending to major in Physics are strongly encouraged to take PHYS2013/2913aswell.
The prerequisites for PHYS3022/3922 (Astrophysics/High Energy Physics) are PHYS2012/2912 and PHYS2013/2913. Students intending to major in Physics must also take PHYS2011/2911 in order to gain the necessary prerequisites for other Senior Physics units.
Full details of Intermediate Physics unit of study structures, content and assessment policies are provided in the unit of study handbooks available at the start of semester on the School of Physics website at www.physics.usyd.edu.au and also on WebCT.

PHYS 2011 **Physics 2A**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 lee x 11 wks, 2 hr computational lab x 9 wks, 3 hr lab x 9 wks. **Assumed Knowledge:** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH (1005/1905) would also be useful. **Prerequisites:** 12 credit points of Junior Physics (excluding PHYS 1500 and PHYS 1600). **Prohibitions:** PHYS (2001 or 2901 or 2911 or 2101 or 2103 or 2213 or 2203). **Assessment:** One 2 hr exam, one 1 hr computational test, practical work, practical report and oral presentation.
In combination with two semesters of Junior Physics, this unit of study continues a first pass through the major branches of classical and modern physics, providing students with a sound basis for later Physics units or for studies in other areas of science or technology. Hence this unit suits students continuing with the study of physics at the general Intermediate level, and those wishing to round out their knowledge of physics before continuing in other fields.
The major topics in this unit of study are:
Optics: The wave nature of light, and its interactions with matter. Applications including spectroscopy and fibre optics.
Nuclear Physics: The fundamental structure of matter.
Computational Physics: In a PC-based computing laboratory students use simulation software to conduct virtual experiments in optics, which illustrate and extend the relevant lectures. Students also gain experience in the use of computers to solve problems in physics. An introductory session is held at the beginning of semester for students who are not familiar with personal computers.
Practical: Experimental Physics is taught as a laboratory module and includes experiments in the areas of optics, nuclear decay and particles, properties of matter, and other topics. Assessment is based on mastery of each attempted experiment. At the end of the semester students prepare a short report on one experiment and make an oral presentation on it.
Textbooks
Young and Freedman, University Physics, 11th ed. Pearson Education Inc. 2004
Experimental Physics Notes, published by the School of Physics

PHYS 2012 **Physics 2B**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee x 13 wks, one 2hr computational lab x 11 wks. **Assumed Knowledge:** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH (1005/1905) would also be useful. **Prerequisites:** PHYS (1003 or 1004 or 1902) and PHYS (1001 or 1002 or 1901 or 2001 or 2901 or 2011 or 2911). **Prohibitions:** PHYS (2102 or 2104 or 2902 or 2002 or 2912 or 2213 or 2203). **Assessment:** One 3 hr exam, one 1 hr computational test.
This unit of study is designed for students continuing with the study of physics at the general Intermediate level, and represents the beginning of a more in-depth study of the main topics of classical and modern physics. The lecture topics are:
Quantum physics: The behaviour of matter and radiation at the microscopic level, modelled by the Schroedinger equation. Application to 1-dimensional systems including solid state physics.
Electromagnetic properties of matter: Electric and magnetic effects in materials; the combination of electric and magnetic fields to produce light and other electromagnetic waves; the effects of matter on electromagnetic waves.
Computational Physics: The computational physics component is similar to that of PHYS2011, except that the material illustrates topics in the quantum physics module.
Textbooks
Serway, Moses and Moyer 'Modern Physics'. Brooks/Cole

PHYS 2013 **Astrophysics and Relativity**

6 credit points. B A, B Sc, UG Study Abroad Program. **Session:** Semester 2. **Classes: 2** lee x 11 wks, **3** hr lab x 12 wks. **Assumed Knowledge:** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH 1005/1905 would also be useful. **Prerequisites:** PHYS (1003 or 1004 or 1902) and PHYS (1001 or 1002 or 1901 or 2011 or 2911). **Corequisites:** PHYS (2012 or 2912). **Prohibitions:** PHYS (2001 or 2901 or 2913 or 2101 or 2103). **Assessment:** One 2 hr exam, practical work, practical report and oral presentation.
This unit of study builds on the foundation provided by Junior Physics and first semester of Intermediate Physics, to provide an introduction to Astrophysics (Structure and evolution of stars), and Special Relativity (Space and time at high velocities).
Practical: Experimental Physics is taught as a laboratory module and includes experiments in the areas of analysis of stellar images, electromagnetic phenomena, electronic instrumentation, quantum physics, and other topics. Assessment is based on mastery of each attempted experiment. At the end of the semester students work in teams on a project, which forms the subject of their written report and oral presentation.
Textbooks
Young and Freedman, University Physics, 11th ed. Pearson Education Inc. 2004
Tango, Introduction to Stellar Astrophysics, published by the School of Physics
Experimental Physics Notes, published by the School of Physics
Other texts to be advised

PHYS 2911 **Physics 2A (Advanced)**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 lee x 1 lwks, 2hr computational lab x 9 wks, 3 hr lab x 9 wks. **Assumed Knowledge:** MATH (1901/1001 and 1902/1002 and 1903/1003). MATH (1905/1005) would also be useful. **Prerequisites:** Credit or better in PHYS (1901 or 1001 or 1002) and Credit or better in PHYS (1902 or 1003 or 1004). **Prohibitions:** PHYS (2901 or 2001 or 2011 or 2101 or 2103 or 2213 or 2203). **Assessment:** One 2 hr exam, one 1 hr computational test, practical work, practical report and oral presentation.
This unit of study is designed for students with a strong interest in Physics. The lecture topics are as for PHYS2011. They are treated in greater depth and with more rigorous attention to derivations than in PHYS2011. The assessment reflects the more challenging nature of the material presented.
Computational Physics: As for PHYS2011, but at a more advanced level.
Practical: As for PHYS2011, but at a more advanced level.
Textbooks
Young and Freedman, University Physics, 11th ed. Pearson Education Inc. 2004
Experimental Physics Notes, published by the School of Physics

PHYS 2912 **Physics 2B (Advanced)**

6 credit points. B A, B E, B Ed, B Sc (Psych), B Sc, B Sc (Environmental), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 3 lee x 13wks, 2hr computational lab x 11 wks. **Assumed Knowledge:** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH 1005/1905 would also be useful. **Prerequisites:** Credit or better in PHYS (1003 or 1004 or 1902) and Credit or better in PHYS (1001 or 1002 or 1901 or 2001 or 2901 or 2011 or 2911). **Prohibitions:** PHYS (2102 or 2104 or 2902 or 2002 or 2012 or 2213 or 2203). **Assessment:** One 3 hr exam, one 1 hr computational test.

Refer to PHYS2911 for an overall description of the Advanced Intermediate Physics program. The lecture topics are as for PHYS2012. Computational Physics: As for PHYS2012, but at a more advanced level.

Textbooks

Serway, Moses and Moyer 'Modern Physics'. Brooks/Cole

PHYS 2913 **Astrophysics and Relativity (Advanced)**

6 credit points. B A, B Sc, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 lee x llwks, 3 hr lab x 12 wks. **Assumed Knowledge:** MATH (1001/1901 and 1002/1902 and 1003/1903). MATH 1005/1905 would also be useful. **Prerequisites:** Credit or better in PHYS (1003 or 1004 or 1902) and Credit or better in PHYS (1001 or 1002 or 1901 or 2011 or 2911). **Corequisites:** PHYS (2912 or 2012).. **Prohibitions:** PHYS (2001 or 2901 or 2013 or 2101 or 2103). **Assessment:** One 3 hr exam, practical work, practical report and oral presentation.

This unit of study builds on the foundation provided by Junior Physics and first semester of Intermediate Physics, to provide an introduction to Astrophysics (Structure and evolution of stars), and Special Relativity (Space and time at high velocities). The material for the advanced unit is treated with more depth and more rigorous attention to derivations than in PHYS2013.

Practical: Experimental Physics is taught as a laboratory module and includes experiments in the areas of analysis of stellar images, electromagnetic phenomena, electronic instrumentation, quantum physics, and other topics. Assessment is based on mastery of each attempted experiment. At the end of the semester students work in teams on a project, which forms the subject of their written report and oral presentation.

Textbooks

Young and Freedman, University Physics, 11th ed. Pearson Education Inc. 2004
Tango, Introduction to Stellar Astrophysics, published by the School of Physics
Experimental Physics Notes, published by the School of Physics
Other texts to be advised

Physics Senior units of study

Associate Professor Tim Bedding

Students intending to major in Physics, or to proceed to Physics Honours, must take at least 24 credit points of Senior Physics, which must include:

- a Semester 1 Core unit (PHYS 3040, 3940 or 3941)
- a Semester 2 Core unit (PHYS 3060, 3960 or 3961)
- two Options units (usually one in each semester)

Further information concerning Senior Physics is available via www.physics.usyd.edu.au

PHYS 3040 **Electromagnetism & Physics Lab**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 lect, 12 x 4hr prac/semester. **Prerequisites:** PHYS(2011 or 2911 or 2001 or 2901), PHYS(2012 or 2912 or 2002 or 2902), MATH(2061 or 2961 or 2067). **Prohibitions:** PHYS3940, PHYS3941, PHYS3011, PHYS3014, PHYS3016, PHYS3017, PHYS3911, PHYS3914, PHYS3916, PHYS3917. **Assessment:** One 1.5hr exam, prac reports and oral presentation.

The lectures cover the theory of electromagnetism, one of the cornerstones of classical physics. They introduce Maxwell's equations in their differential form, using the power of vector calculus. The main application will be to electromagnetic waves, including reflection and absorption, which have application in fields such as optics, plasma physics and astrophysics. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

Textbooks

Introduction to Electrodynamics (Third Edition) by David J Griffiths

PHYS 3940 **Electromagnetism & Physics Lab (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 lee, 12 x 4hr prac/semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with a grade of at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with a grade of at least Credit; MATH (2061 or 2961 or 2067). **Prohibitions:** PHYS3040, PHYS3941, PHYS3011, PHYS3014, PHYS3016, PHYS3017, PHYS3911, PHYS3914, PHYS3916, PHYS3917. **Assessment:** One 1.5 hr exam, prac reports and oral presentation.

This unit covers the same topics as PHYS 3040, but with greater depth and some more challenging material.

Textbooks

Introduction to Electrodynamics (Third Edition) by David J. Griffiths

PHYS 3941 **Electromagnetism & Special Project (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 lec/semester, 3.5hr/wkin School of Physics. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; MATH (2061 or 2961 or 2067). **Prohibitions:** PHYS3040, PHYS3940, PHYS3961, PHYS3011, PHYS3911, PHYS3918, PHYS3928. **Assessment:** One 1.5 hr exam, project report and talk.

NB: Department permission required for enrolment. Approval for this unit must be obtained from the School of Physics Senior Coordinator.

The lectures cover the theory of electromagnetism, one of the cornerstones of classical physics. They introduce Maxwell's equations in their differential form, using the power of vector calculus. The main application will be to electromagnetic waves, including reflection and absorption, which have application in fields such as optics, plasma physics and astrophysics. The project is carried out in a research group within the School of Physics, working on a research experiment or theoretical project supervised by a researcher. The aim is for students to acquire an understanding of the nature of research, to apply their knowledge of physics and scientific practice, and to serve as preparation for a research project at Honours level and beyond.

Textbooks

Introduction to Electrodynamics (Third Edition) by David J. Griffiths

PHYS 3050 **Nanoscience/Optics & Physics Lab**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 2hr lee, 6 x 4 hr prac/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902). **Prohibitions:** PHYS3950, PHYS3052, PHYS3053, PHYS3056, PHYS3952, PHYS3953, PHYS3956, PHYS3012, PHYS3021, PHYS3912, PHYS3921, PHYS3057, PHYS3957, PHYS3058, PHYS3958. **Assessment:** One 2 hr exams, prac reports.

Nanoscience is the study of the behaviour of light and matter as they interact with structures that have features on nanometre scales. This part of the course will cover the fundamental physics of nanoscience and the methods used for manipulating matter and creating structures on these scales. The lectures on Optics introduce students to modern optics, using the laser to illustrate the applications in studying the properties of matter and many important optical phenomena. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS 3950 **Nanoscience/Optics & Physics Lab (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit. **Prohibitions:** PHYS3050, PHYS3052, PHYS3053, PHYS3056, PHYS3952, PHYS3953, PHYS3956, PHYS3012, PHYS3021, PHYS3912, PHYS3921, PHYS3057, PHYS3957, PHYS3058, PHYS3958. **Assessment:** One 2 hr exam, prac reports.

This unit covers the same topics as PHYS 3050, but with greater depth and some more challenging material.

PHYS 3051 **Thermodynamics/Biol. Physics & Lab**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902). **Prohibitions:** PHYS3951, PHYS3052, PHYS3053, PHYS3056, PHYS3952, PHYS3953, PHYS3956, PHYS3013, PHYS3023, PHYS3913, PHYS3923, PHYS3057, PHYS3957, PHYS3058, PHYS3958. **Assessment:** One 2 hr exam, prac reports.

The lectures on Thermodynamics provide a formal introduction to classical equilibrium thermodynamics, including chemical reactions, phases, and electric and magnetic fields, and an introduction to the principles of statistical mechanics. The Biological Physics component will cover applications of physics to biological systems, including topics such as molecular biology, structure and properties of polymers and proteins, thermodynamics of cells, transport of biomolecules, excitation of nerve impulses, and computer simulations of biological systems. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS 3951 **Thermodynamics/Biol. Physics & Lab (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 2hr lee, 6 x 4hr prac.semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit. **Prohibitions:** PHYS3051, PHYS3052, PHYS3053, PHYS3056, PHYS3952, PHYS3953, PHYS3956, PHYS3013, PHYS3023, PHYS3913, PHYS3923, PHYS3057, PHYS3957, PHYS3058, PHYS3958. **Assessment:** One 2 hr exam, prac reports.

This unit covers the same topics as PHYS 3051, but with greater depth and some more challenging material.

PHYS 3052 **Nanoscience/Thermodynamics & Lab**
6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902). **Prohibitions:** PHYS3952, PHYS3050, PHYS3051, PHYS3053, PHYS3056, PHYS3950, PHYS3951, PHYS3953, PHYS3956, PHYS3013, PHYS3021, PHYS3913, PHYS3921, PHYS3057, PHYS3957, PHYS3058, PHYS3958. **Assessment:** One 2 hr exam, prac reports.
Nanoscience is the study of the behaviour of light and matter as they interact with structures that have features on nanometre scales. This part of the course will cover the fundamental physics of nanoscience and the methods used for manipulating matter and creating structures on these scales. The lectures on Thermodynamics provide a formal introduction to classical equilibrium thermodynamics, including chemical reactions, phases, and electric and magnetic fields, and an introduction to the principles of statistical mechanics. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS 3952 **Nanoscience/Thermodynamics & Lab (Adv)**
6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit. **Prohibitions:** PHYS3052, PHYS3050, PHYS3051, PHYS3053, PHYS3056, PHYS3950, PHYS3951, PHYS3953, PHYS3956, PHYS3013, PHYS3021, PHYS3913, PHYS3921, PHYS3057, PHYS3957, PHYS3058, PHYS3958. **Assessment:** One 2 hr exam, prac reports.
This unit covers the same topics as PHYS 3052, but with greater depth and some more challenging material.

PHYS 3053 **Thermodynamics/Optics & Physics Lab**
6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902). **Prohibitions:** PHYS3953, PHYS3050, PHYS3051, PHYS3052, PHYS3056, PHYS3950, PHYS3951, PHYS3952, PHYS3956, PHYS3012, PHYS3013, PHYS3912, PHYS3913, PHYS3057, PHYS3957, PHYS3058, PHYS3958. **Assessment:** One 2 hr exam, prac reports.
The lectures on Thermodynamics provide a formal introduction to classical equilibrium thermodynamics, including chemical reactions, phases, and electric and magnetic fields, and an introduction to the principles of statistical mechanics. The lectures on Optics introduce students to modern optics, using the laser to illustrate the applications in studying the properties of matter and many important optical phenomena. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS 3953 **Thermodynamics/Optics & Physics Lab(Adv)**
6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit. **Prohibitions:** PHYS3053, PHYS3050, PHYS3051, PHYS3052, PHYS3056, PHYS3950, PHYS3951, PHYS3952, PHYS3956, PHYS3012, PHYS3013, PHYS3912, PHYS3913, PHYS3057, PHYS3957, PHYS3058, PHYS3958. **Assessment:** One 2 hr exam, prac report.
This unit covers the same topics as PHYS 3053, but with greater depth and some more challenging material.

PHYS 3056 **Nanoscience/Optics/Thermodynamics**
6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 3hr lec/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902). **Prohibitions:** PHYS3956, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3057, PHYS3058, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3957, PHYS3958, PHYS3012, PHYS3013, PHYS3021, PHYS3912, PHYS3913, PHYS3921. **Assessment:** One 3 hr exam.
Nanoscience is the study of the behaviour of light and matter as they interact with structures that have features on nanometre scales. This part of the course will cover the fundamental physics of nanoscience and the methods used for manipulating matter and creating structures on these scales. The lectures on Optics introduce students to modern optics, using the laser to illustrate the applications in studying the properties of matter and many important optical phenomena. The lectures on Thermodynamics provide a formal introduction to classical equilibrium thermodynamics, including chemical reactions, phases, and electric and magnetic fields, and an introduction to the principles of statistical mechanics.

PHYS 3956 **Nanoscience/Optics/Thermodynamics (Adv)**
6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 3hr lec/sem. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit. **Prohibitions:** PHYS3056, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3057, PHYS3058, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3957, PHYS3958, PHYS3012, PHYS3013, PHYS3021, PHYS3912, PHYS3913, PHYS3921. **Assessment:** One 3 hr exam.
This unit covers the same topics as PHYS 3056, but with greater depth and some more challenging material.

PHYS 3057 **Nanoscience/Thermodynamic/Biol.Phys**
6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 3hr lec/semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902). **Prohibitions:** PHYS3957, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3056, PHYS3058, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3956, PHYS3958, PHYS3013, PHYS3021, PHYS3023, PHYS3913, PHYS3921, PHYS3923. **Assessment:** One 3 hr exam.
Nanoscience is the study of the behaviour of light and matter as they interact with structures that have features on nanometre scales. This part of the course will cover the fundamental physics of nanoscience and the methods used for manipulating matter and creating structures on these scales. The lectures on Thermodynamics provide a formal introduction to classical equilibrium thermodynamics, including chemical reactions, phases, and electric and magnetic fields, and an introduction to the principles of statistical mechanics. The Biological Physics component will cover applications of physics to biological systems, including topics such as molecular biology, structure and properties of polymers and proteins, thermodynamics of cells, transport of biomolecules, excitation of nerve impulses, and computer simulations of biological systems.

PHYS 3957 **Nanoscience/Thermodynamic/Biol.Phys(Adv)**
6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 3hr lec/semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit. **Prohibitions:** PHYS3057, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3056, PHYS3058, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3956, PHYS3958, PHYS3013, PHYS3021, PHYS3023, PHYS3913, PHYS3921, PHYS3923. **Assessment:** One 3 hr exam.
This unit covers the same topics as PHYS 3057, but with greater depth and some more challenging material.

PHYS 3058 **Optics/Thermodynamics/Biol. Physics**
6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 3hr lec/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902). **Prohibitions:** PHYS3958, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3056, PHYS3057, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3956, PHYS3957, PHYS3012, PHYS3013, PHYS3023, PHYS3912, PHYS3913, PHYS3923. **Assessment:** One 3 hr exam.
The lectures on Optics introduce students to modern optics, using the laser to illustrate the applications in studying the properties of matter and many important optical phenomena. The lectures on Thermodynamics provide a formal introduction to classical equilibrium thermodynamics,-including chemical reactions, phases, and electric and magnetic fields, and an introduction to the principles of statistical mechanics. The Biological Physics component will cover applications of physics to biological systems, including topics such as molecular biology, structure and properties of polymers and proteins, thermodynamics of cells, transport of biomolecules, excitation of nerve impulses, and computer simulations of biological systems.

PHYS 3958 **Optics/Thermodynamics/Biol.Physics (Adv)**
6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 1. **Classes:** 19 x 3hr lec/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit. **Prohibitions:** PHYS3058, PHYS3050, PHYS3051, PHYS3052, PHYS3053, PHYS3056, PHYS3057, PHYS3950, PHYS3951, PHYS3952, PHYS3953, PHYS3956, PHYS3957, PHYS3012, PHYS3013, PHYS3023, PHYS3912, PHYS3913, PHYS3923. **Assessment:** One 3 hr exam.
This unit covers the same topics as PHYS 3058, but with greater depth and some more challenging material.

PHYS 3060 **Quantum Mechanics & Physics Lab**
6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc

(Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 lee, 6 x 4hr prac/semester. **Prerequisites:** PHYS 2011 or 2911 or 2001 or 2901; PHYS 2012 or 2912 or 2002 or 2902; MATH 2061 or 2961 or 2067. **Prohibitions:** PHYS 3960, 3961, 3011, 3024, 3026, 3027, 3911, 3924, 3926, 3927. **Assessment:** One 1.5 hr exam, prac reports.

The lectures cover the fundamental concepts and formalism of quantum dynamics, and the application to angular momentum and symmetry in quantum mechanics. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

Textbooks

None. Recommended reference: Quantum Physics of Atoms, Molecules, Solids, Nuclei, and Particles (Second Edition) by Robert Eisberg and Robert Resnick

PHYS 3960 **Quantum Mechanics & Physics Lab (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 lee, 12 x 4hr prac/semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; MATH (2061 or 2961 or 2067). **Prohibitions:** PHYS3060, PHYS3961, PHYS3011, PHYS3024, PHYS3026, PHYS3027, PHYS3911, PHYS3924, PHYS3926, PHYS3927. **Assessment:** One 1.5 hr exam, prac reports and oral presentation.

This unit covers the same topics as PHYS 3060, but with greater depth and some more challenging material.

Textbooks

Introductory Quantum Mechanics (Fourth Edition) by Richard L. Liboff

PHYS 3961 **Quantum Mechanics & Special Project(Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 lec/semester, 3.5hr in School of Physics. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; MATH (2061 or 2961 or 2067). **Prohibitions:** PHYS3060, PHYS3960, PHYS3941, PHYS3011, PHYS3911, PHYS3918, PHYS3928. **Assessment:** One 1.5 hr exam, project report and oral presentation.

NB: Department permission required for enrolment. Approval for this unit must be obtained from the School of Physics Senior Coordinator

The lectures cover the fundamental concepts and formalism of quantum dynamics, and the application to angular momentum and symmetry in quantum mechanics. The project is carried out in a research group within the School of Physics, working on a research experiment or theoretical project supervised by a researcher. The aim is for students to acquire an understanding of the nature of research, to apply their knowledge of physics and scientific practice, and to serve as preparation for a research project at Honours level and beyond.

Textbooks

Introductory Quantum Mechanics (Fourth Edition) by Richard L. Liboff

PHYS 3070 **Plasma Physics/Cond. Matter** & **Lab**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902). **Prohibitions:** PHYS3970, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3021, PHYS3912, PHYS3921. **Assessment:** One 2 hr exam, prac reports.

Plasma Physics is the study of ionized gases, which are collections of charged and neutral particles and form the main constituent of the Universe. The lectures cover the properties of plasmas and their applications, including nuclear fusion energy, materials synthesis and modification, environmental remediation, aerospace, nano- and biomedical technologies. The lectures on Condensed Matter Physics cover the theoretical underpinning and properties of condensed matter, specifically the physics of solids. Semiconductors are investigated in detail, considering recent discoveries and new developments in nanotechnology and lattice dynamics. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS 3970 **Plasma Physics/Cond. Matter** & **Lab (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit. **Prohibitions:** PHYS3070, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3021, PHYS3912, PHYS3921. **Assessment:** One 2 hr exam, prac reports.

This unit covers the same topics as PHYS 3070, but with greater depth and some more challenging material.

PHYS 3071 **High Energy/Astrophysics** & **Lab**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901). **Prohibitions:** PHYS3971, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3022, PHYS3922. **Assessment:** One 2 hr exam, prac reports.

The lectures on High Energy Physics cover the basic constituents of matter, such as quarks and leptons, examining their fundamental properties and interactions, and their origin at the creation of the universe. The lectures on Astrophysics explore astrophysical environments inside stars and beyond (e.g. the interstellar medium, the intergalactic medium and galaxies themselves) and focus on one of the most important physical processes in astrophysics: the transport of radiative energy. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS 3971 **High Energy/Astrophysics** & **Lab (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit. **Prohibitions:** PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3022, PHYS3922. **Assessment:** One 2 hr exam, prac reports.

This unit covers the same topics as PHYS 3071, but with greater depth and some more challenging material.

PHYS 3072 **Plasma Physics/Astrophysics** & **Lab**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901). **Prohibitions:** PHYS3972, PHYS3070, PHYS3071, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3021, PHYS3022, PHYS3921, PHYS3922. **Assessment:** One 2 hr exam, prac reports.

Plasma Physics is the study of ionized gases, which are collections of charged and neutral particles and form the main constituent of the Universe. The lectures cover the properties of plasmas and their applications, including nuclear fusion energy, materials synthesis and modification, environmental remediation, aerospace, nano- and biomedical technologies. The lectures on Astrophysics explore astrophysical environments inside stars and beyond (e.g. the interstellar medium, the intergalactic medium and galaxies themselves) and focus on one of the most important physical processes in astrophysics: the transport of radiative energy. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS 3972 **Plasma Physics/Astrophysics** & **Lab (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit. **Prohibitions:** PHYS3072, PHYS3070, PHYS3071, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3021, PHYS3022, PHYS3921, PHYS3922. **Assessment:** One 2 hr exam, pracr reports.

This unit covers the same topics as PHYS 3072, but with greater depth and some more challenging material.

PHYS 3073 **Plasma/High Energy Physics** & **Lab**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901). **Prohibitions:** PHYS3973, PHYS3070, PHYS3071, PHYS3072, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3021, PHYS3022, PHYS3921, PHYS3922. **Assessment:** One 2 hr exam, prac reports.

Plasma Physics is the study of ionized gases, which are collections of charged and neutral particles and form the main constituent of the Universe. The lectures cover the properties of plasmas and their

applications, including nuclear fusion energy, materials synthesis and modification, environmental remediation, aerospace, nano- and biomedical technologies. The lectures on High Energy Physics cover the basic constituents of matter, such as quarks and leptons, examining their fundamental properties and interactions, and their origin at the creation of the universe. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS 3973 **Plasma/High Energy Physics & Lab (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit. **Prohibitions:** PHYS3073, PHYS3070, PHYS3071, PHYS3072, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3021, PHYS3022, PHYS3921, PHYS3922. **Assessment:** One 2 hr exam, prac reports.
This unit covers the same topics as PHYS 3073, but with greater depth and some more challenging material.

PHYS 3974 **High Energy/Cond. Matter Physics & Lab**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901). **Prohibitions:** PHYS3974, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3022, PHYS3912, PHYS3922. **Assessment:** One 2 hr exam, prac reports.
Plasma Physics is the study of ionized gases, which are collections of charged and neutral particles and form the main constituent of the Universe. The lectures cover the properties of plasmas and their applications, including nuclear fusion energy, materials synthesis and modification, environmental remediation, aerospace, nano- and biomedical technologies. The lectures on High Energy Physics cover the basic constituents of matter, such as quarks and leptons, examining their fundamental properties and interactions, and their origin at the creation of the universe. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS 3974 **High Energy/Cond. Matter Phys.& Lab(Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit. **Prohibitions:** PHYS3074, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3022, PHYS3912, PHYS3922. **Assessment:** One 2 hr exam, prac reports.
This unit covers the same topics as PHYS 3074, but with greater depth and some more challenging material.

PHYS 3975 **Cond. Matter/Astrophysics & Lab**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961). **Prerequisites:** PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901). **Prohibitions:** PHYS3975, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3022, PHYS3912, PHYS3922. **Assessment:** One 2 hr exam, prac reports.
The lectures on Condensed Matter Physics cover the theoretical underpinning and properties of condensed matter, specifically the physics of solids. Semiconductors are investigated in detail, considering recent discoveries and new developments in nanotechnology and lattice dynamics. The lectures on Astrophysics explore astrophysical environments inside stars and beyond (e.g. the interstellar medium, the intergalactic medium and galaxies themselves) and focus on one of the most important physical processes in astrophysics: the transport of radiative energy. In the practical laboratory classes, students will choose from a range of experiments that aim to give them an appreciation of the analytical, technical and practical skills required to conduct modern experimental work.

PHYS 3975 **Cond. Matter/Astrophysics & Lab (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 2hr lee, 6 x 4hr prac/semester. **Assumed Knowledge:** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961). **Prerequisites:** PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit. **Prohibitions:** PHYS3075, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3076, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3976, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3022, PHYS3912, PHYS3922. **Assessment:** One 2 hr exam, prac reports.
This unit covers the same topics as PHYS 3075, but with greater depth and some more challenging material.

PHYS 3076 **Plasma/Cond.Matter/High Energy Physics**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 3hr lec/semester. **Assumed Knowledge:** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901). **Prohibitions:** PHYS3976, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3021, PHYS3022, PHYS3912, PHYS3921, PHYS3922. **Assessment:** One 3 hr exam.
Plasma Physics is the study of ionized gases, which are collections of charged and neutral particles and form the main constituent of the Universe. The lectures cover the properties of plasmas and their applications, including nuclear fusion energy, materials synthesis and modification, environmental remediation, aerospace, nano- and biomedical technologies. The lectures on Condensed Matter Physics cover the theoretical underpinning and properties of condensed matter, specifically the physics of solids. Semiconductors are investigated in detail, considering recent discoveries and new developments in nanotechnology and lattice dynamics. The lectures on High Energy Physics cover the basic constituents of matter, such as quarks and leptons, examining their fundamental properties and interactions, and their origin at the creation of the universe.

PHYS 3976 **Plasma/Cond.Matter/High Energy Phys(Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 3hr lec/semester. **Assumed Knowledge:** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit. **Prohibitions:** PHYS3076, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3077, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3977, PHYS3978, PHYS3979, PHYS3012, PHYS3021, PHYS3022, PHYS3912, PHYS3921, PHYS3922. **Assessment:** One 3 hr exam.
This unit covers the same topics as PHYS 3076, but with greater depth and some more challenging material.

PHYS 3977 **Plasma/Cond. Matter/Astrophysics**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 3hr lec/semester. **Assumed Knowledge:** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901). **Prohibitions:** PHYS3977, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3978, PHYS3979, PHYS3012, PHYS3021, PHYS3022, PHYS3912, 3921, PHYS3922. **Assessment:** One 3 hr exam.
Plasma Physics is the study of ionized gases, which are collections of charged and neutral particles and form the main constituent of the Universe. The lectures cover the properties of plasmas and their applications, including nuclear fusion energy, materials synthesis and modification, environmental remediation, aerospace, nano- and biomedical technologies. The lectures on Condensed Matter Physics cover the theoretical underpinning and properties of condensed matter, specifically the physics of solids. Semiconductors are investigated in detail, considering recent discoveries and new developments in nanotechnology and lattice dynamics. The lectures on Astrophysics explore astrophysical environments inside stars and beyond (e.g. the interstellar medium, the intergalactic medium and galaxies themselves) and focus on one of the most important physical processes in astrophysics: the transport of radiative energy.

PHYS 3977 **Plasma/Cond. Matter/Astrophysics (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 3hr lec/semester. **Assumed Knowledge:** Electromagnetism and Quantum Mechanics at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit. **Prohibitions:** PHYS3077, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3078, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3978,

PHYS3979, PHYS3012, PHYS3021, PHYS3022, PHYS3912, PHYS3921, PHYS3922. **Assessment:** One 3 hr exam.
This unit covers the same topics as PHYS3077, but with greater depth and some more challenging material.

PHYS 3078 **Plasma/High Energy/Astrophysics**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 3hr lec/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901). **Prohibitions:** PHYS3978, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3979, PHYS3021, PHYS3022, PHYS3921, PHYS3922. **Assessment:** One 3 hr exam.
Plasma Physics is the study of ionized gases, which are collections of charged and neutral particles and form the main constituent of the Universe. The lectures cover the properties of plasmas and their applications, including nuclear fusion energy, materials synthesis and modification, environmental remediation, aerospace, nano- and biomedical technologies. The lectures on High Energy Physics cover the basic constituents of matter, such as quarks and leptons, examining their fundamental properties and interactions, and their origin at the creation of the universe. The lectures on Astrophysics explore astrophysical environments inside stars and beyond (e.g. the interstellar medium, the intergalactic medium and galaxies themselves) and focus on one of the most important physical processes in astrophysics: the transport of radiative energy.

PHYS 3978 **Plasma/High Energy/Astrophysics (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 3hr lec/semester. **Assumed Knowledge:** Electromagnetism at Senior Physics level; MATH (2061 or 2961 or 2067). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least Credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit. **Prohibitions:** PHYS3078, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3079, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3979, PHYS3021, PHYS3022, PHYS3921, PHYS3922. **Assessment:** One 3 hr exam.
This unit covers the same topics as PHYS3078, but with greater depth and some more challenging material.

PHYS 3079 **Cond. Matter/High Energy/Astrophysics**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 3hr lec/semester. **Assumed Knowledge:** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901); PHYS (2012 or 2912 or 2002 or 2902); PHYS (2013 or 2913 or 2001 or 2901). **Prohibitions:** PHYS3979, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3012, PHYS3022, PHYS3912, PHYS3922. **Assessment:** One 3 hr exam.
The lectures on Condensed Matter Physics cover the theoretical underpinning and properties of condensed matter, specifically the physics of solids. Semiconductors are investigated in detail, considering recent discoveries and new developments in nanotechnology and lattice dynamics. The lectures on High Energy Physics cover the basic constituents of matter, such as quarks and leptons, examining their fundamental properties and interactions, and their origin at the creation of the universe. The lectures on Astrophysics explore astrophysical environments inside stars and beyond (e.g. the interstellar medium, the intergalactic medium and galaxies themselves) and focus on one of the most important physical processes in astrophysics: the transport of radiative energy.

PHYS 3979 **Cond. Matter/High Energy/Astrophys (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 19 x 3hr lec/semester. **Assumed Knowledge:** Quantum Mechanics at Senior Physics level; MATH (2061 or 2961). **Prerequisites:** PHYS (2011 or 2911 or 2001 or 2901) with at least credit; PHYS (2012 or 2912 or 2002 or 2902) with at least Credit; PHYS (2013 or 2913 or 2001 or 2901) with at least Credit. **Prohibitions:** PHYS3079, PHYS3070, PHYS3071, PHYS3072, PHYS3073, PHYS3074, PHYS3075, PHYS3076, PHYS3077, PHYS3078, PHYS3970, PHYS3971, PHYS3972, PHYS3973, PHYS3974, PHYS3975, PHYS3976, PHYS3977, PHYS3978, PHYS3012, PHYS3022, PHYS3912, PHYS3922. **Assessment:** One 3 hr exam.
This unit covers the same topics as PHYS 3079, but with greater depth and some more challenging material.

Physics Honours

A/Prof Anne Green
Qualifying: 24 credit points of Senior Physics or equivalent.
Classes: 6 lecture courses & research project.
Assessment: coursework exams, one 40 page report, research oral presentation.
Students may be admitted to the Honours Program in Physics if they are of sufficient merit and have completed the qualifying requirements, according to the guidelines set out in the Senior Physics section of this handbook.
Fulltime enrolment is equivalent to 48 credit points for the year.
Physics Honours comprises formal coursework (weight 50%) and a research project (weight 50%). Students are offered an opportunity to carry out independent research as a member of one of the active research groups in the School of Physics, under the supervision of a member of staff. A wide range of possible projects is available in many areas of contemporary physics including astrophysics, solar and space sciences, photonics, computational condensed matter, materials, coatings and practical applications of plasmas, brain dynamics, medical physics and several areas of theoretical physics.
The formal courses from which students may choose include studies of quantum mechanics, nanotechnology, optical devices, general relativity, cosmology, space and solar physics, sub-atomic physics, relativistic quantum theory, medical physics, electromagentism and the practice of physics. Not all the courses are offered every year and students may substitute a limited number of courses with appropriate ones from complementary disciplines, subject to the approval of the Honours co-ordinator.
Honours students are encouraged to participate along with staff and research students in all activities within the School.
They are provided with office accommodation, and are expected to attend colloquia and seminars. They may be employed for several hours per week in Junior teaching. Further information is available from the Physics Student Support Office, the Honours co-ordinator or from the website www.physics.usyd.edu.au/ugrad/hons.html

Physiology

The Department of Physiology provides introductory general Intermediate units of study and for those wishing to major in the subject, in-depth Senior units of study. For Senior units the February semester offers Neuroscience and Human Cellular Physiology, and the July semester offers Heart and Circulation as well as further study in Neuroscience.

PHSI 2005 **Integrated Physiology A**

6 credit points. B Sc, B Sc (Nutrition). Dr Meloni Muir. **Session:** Semester 1. **Classes:** 5 lee, 3 prac, 3 tutorial per fortnight. **Prerequisites:** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study. **Prohibitions:** PHSI (2905 or 2001 or 2101 or 2901). **Assessment:** One written exam; group and individual written and oral presentations.
NB: The completion of 6 credit points ofMBLG units of study is highly recommended for progression to Senior Physiology. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites.
This unit of study gives a basic introduction to the functions of the nervous system, including excitable cell (nerve and muscle) physiology, sensory and motor systems and central processing. It also incorporates haematology and cardiovascular physiology. These topics will be organized and integrated as modules. The practical component involves experiments on humans, isolated tissues, and computer simulations, with an emphasis on hypothesis generation and data analysis. Problem-based learning tutorial sessions will be integrated with this demonstrating the integrative nature of physiology. Both oral and written communication skills are emphasized, as well as group learning.
Textbooks
Lauralee Sherwood: Human Physiology: From Cells to Systems 5th edition 2004

PHSI 2905 **Integrated Physiology A (Advanced)**

6 credit points. B Sc. Dr Catherine Leamey and Dr Dario Protti. **Session:** Semester 1. **Classes:** 5 lee, 3 prac, 3 tutorial per fortnight. Advanced students will be exempt from attending some classes to permit meetings with supervisor. **Prerequisites:** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study. **Prohibitions:** PHSI (2005 or 2901 or 2001 or 2101).. **Assessment:** One written exam; group oral and individual written presentations, 1 research essay (research essay will replace some other assessment items from regular course).
NB: Department permission required for enrolment. Permission from the coordinators is required for entry into this course. It is available only to selected students who have achieved a WAM of 65 (Credit average) or higher in their Junior units of study. Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites.
The completion of 6 credit points ofMBLG units of study is highly recommended for progression to Senior Physiology
This unit of study is an extension of PHSI2005 for talented students with an interest in Physiology and Physiological research. The lecture/practical component of the course is run in conjunction with PHSI2005. This unit of study gives a basic introduction to the functions of the nervous system, including excitable cell (nerve and muscle) physiology, sensory and motor systems and central pro-

cessing. It also incorporates haematology and cardiovascular physiology. These topics will be organized and integrated as modules. The practical component involves experiments on humans, isolated tissues, and computer simulations, with an emphasis on hypothesis generation and data analysis. Problem-based learning tutorial sessions will be integrated with this demonstrating the integrative nature of physiology. Both oral and written communication skills are emphasized, as well as group learning. The advanced stream of the course gives students an opportunity to interact with academics in small groups (or one to one) and to carry out a research project. Students will be allocated a supervisor and a project according to interest and availability. A research project will be determined by the supervisor, and students will carry out a library-based research project and have the opportunity to discuss their progress and understanding of the topic at regular meetings with the supervisor. Students will submit their research assignment as a major component of their assessment for the course. This will replace some other assessable activities from the regular course. Students will also be exempt from attending some of the tutorial and/or practical classes in order to give them time to meet with their supervisor.

Textbooks

Lauralee Sherwood: Human Physiology: From Cells to Systems 5th edition 2004

PHSI 2006 **Integrated Physiology B**

6 credit points. B Sc, B Sc (Nutrition). Dr Meloni Muir. **Session:** Semester 2. **Classes:** 5 lee, 3 prac, 3 tutorial per fortnight. **Prerequisites:** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study. **Prohibitions:** PHSI (2906 or 2002 or 2102 or 2902).. **Assessment:** One written exam; group and individual written and oral presentations.

NB: The completion of Molecular Biology and Genetics A is highly recommended for progression to Senior Physiology.

Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisites.

This unit of study gives a basic introduction to the functions of the remaining body systems: gastrointestinal, respiratory, endocrine, reproductive and renal. These topics will be organized and integrated as modules. The practical component involves experiments on humans, isolated tissues, and computer simulations, with an emphasis on hypothesis generation and data analysis. Problem-based learning tutorial sessions will be integrated with this demonstrating the integrative nature of physiology. Both oral and written communication skills are emphasized, as well as group learning.

Textbooks

Lauralee Sherwood: Human Physiology: From Cells to Systems 5th edition 2004

PHSI 2906 **Integrated Physiology B (Advanced)**

6 credit points. B Sc. Dr Dario Protti and Dr Catherine Leamey. **Session:** Semester 2. **Classes:** 5 lee, 3 prac, 2 tutorial per fortnight. Advanced students will be exempt from attending some of these classes to permit meetings with supervisor. **Prerequisites:** 6 credit points of Junior Chemistry plus 30 credit points from any Junior Chemistry, Physics, Mathematics, Biology, Psychology units of study. **Prohibitions:** PHSI (2006 or 2902 or 2002 or 2102).. **Assessment:** One written exam; group oral and individual written presentations, 1 research essay (research essay will replace some other assessment items from regular course).

NB: Department permission required for enrolment. Permission from the coordinators is required for entry into this course. It is available only to selected students who have achieved a WAM of 65 (Credit average) or higher in their Junior units of study.

Students taking combined degrees or with passes in units not listed should consult a coordinator if they do not meet the prerequisite.

The completion of Molecular Biology and Genetics A is highly recommended for progression to Senior Physiology.

This unit of study is an extension of PHSI2006 for talented students with an interest in Physiology and Physiological research. The lecture/practical component of the course is run in conjunction with PHSI2006. This unit of study gives a basic introduction to the remaining of the body systems: gastrointestinal, respiratory, endocrine, reproductive and renal. The practical component involves simple experiments on humans, isolated tissues, and computer simulations, with an emphasis on hypothesis generation and data analysis. Problem-based learning tutorial sessions will be integrated with this demonstrating the integrative nature of physiology. Both oral and written communication skills are emphasized, as well as group learning. The advanced stream of the course gives students an opportunity to interact with academics in small groups (or one to one) and to carry out a research project. Students will be allocated a supervisor and a project according to interest and availability. A research project will be determined by the supervisor, and students will carry out a library-based research project and have the opportunity to discuss their progress and understanding of the topic at regular meetings with the supervisor. Students will submit their research assignment as a major component of their assessment for the course. This will replace some other assessable activities from the regular course. Students will also be exempt from attending some of the tutorial and/or practical classes in order to give them time to meet with their supervisor.

Textbooks

Lauralee Sherwood: Human Physiology: From Cells to Systems 5th edition 2004

NEUR 3001 **Neuroscience: Special Senses**

6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Dario Protti. **Session:** Semester 1. **Classes:** 2 lec/wk, 3 prac per fortnight, 3 tut per fortnight. **Assumed Knowledge:** It is strongly recommended that students also take unit NEUR3002. PHSI2005 and ANAT2010 are assumed knowledge. **Prerequisites:** For BMedSc students: BMED(2801 or 2503) and BMED(2806 or 2505)

For other students: (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **Prohibitions:** PHSI3001, NEUR3901. **Assessment:** Two 1 hour exams, 1 prac report, tutorial papers, 2000w essay.

The aim of this course is to provide students with an introduction to the structure and function of the nervous system and to the main concepts of processing of sensory information. Understanding basic sensory transduction mechanisms and the function of the sensory systems is necessary to understand how perceptual processes work in normal and disease conditions and provides a gateway to unravel the complexity of the mind. Basic aspects of low and high level sensory processing in all sense modalities will be covered, with a special emphasis in the auditory and visual systems. The relationship between sensory systems, perception and higher cognitive functions will be addressed.

Textbooks

Principles of Neural Science. Kandel, Schwartz, Jessel. 4th Ed, Elsevier, NY, 2000
or
Neuroscience: Exploring the brain. Bear, Connors, Paradiso. Baltimore: Williams & Wilkins, 2001

NEUR 3901 **Neuroscience: Special Senses (Advanced)**

6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Dario Protti. **Session:** Semester 1. **Classes:** 2 lec/wk, 3 prac per fortnight, 3 tut per fortnight. Advanced students may be exempt from attending some of these classes to permit meetings with supervisor. **Assumed Knowledge:** PHSI2005 and ANAT2010. **Prerequisites:** For BMedSc students: Credit average in BMED(2801 or 2503) and BMED(2806 or 2505) For other students: Credit average in (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **Prohibitions:** NEUR3001 and PHSI3001 andPHSI3901. **Assessment:** Two 1 hour exams, 1 prac report, tutorial papers, 1 research or library essay (research essay will replace some other assessment items from regular course).

NB: Permission from the coordinators is required for entry into this course. It is strongly recommended that students also take unit NEUR3002 or NEUR3902.

This unit of study is an extension of NEUR3001 for talented students with an interest in Neuroscience and research in this field. The lecture/practical component of the course is run in conjunction with NEUR3001. The aim of this course is to provide students with an introduction to the structure and function of the nervous system and to the main concepts of processing of sensory information. Understanding basic sensory transduction mechanisms and the function of the sensory systems is necessary to understand how perceptual processes work in normal and disease conditions and provides a gateway to unravel the complexity of the mind. Basic aspects of low and high level sensory processing in all sense modalities will be covered, with a special emphasis in the auditory and visual systems. The relationship between sensory systems, perception and higher cognitive functions will be addressed.

Textbooks

Principles of Neural Science. Kandel, Schwartz, Jessel. 4th Ed, Elsevier, NY, 2000
or
Neuroscience: Exploring the brain. Bear, Connors, Paradiso. Baltimore: Williams & Wilkins, 2001

NEUR 3002 **Neuroscience: Motor Systems & Behaviour**

6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Vladimir Balcar. **Session:** Semester 1. **Classes:** 2 lec/wk, 3 prac per fortnight, 3 tut per fortnight. **Assumed Knowledge:** It is strongly recommended that students also take unit NEUR3001. ANAT2010 and PHSI2005 is assumed knowledge. **Prerequisites:** For BMedSc students: BMED(2801 or 2503) and BMED(2806 or 2505)

For other students: (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **Prohibitions:** PHSI3001, NEUR3902. **Assessment:** Two 1 hour exams, 1 prac report, tutorial papers, 2000w essay.

The aim of this course is to provide students with an introduction to the structure and function of the nervous system. Our current knowledge of how the brain works is based on the analysis of the normal structure of the nervous system and its pathways, the functional effects of lesions and neurological diseases in different parts of the nervous system, and the way that nerve cells work at the molecular, cellular and integrative level. This course focuses on to the neural circuits and the mechanisms that control somatic and autonomic motor systems, motivated behaviours, emotions, and other higher order functions. The lecture series addresses the different topics, each of which offers special insight into the function of the nervous system in health and disease.

Textbooks

Principles of Neural Science. Kandel, Schwartz, Jessel. 4th Ed, Elsevier, NY, 2000 or
Neuroscience: Exploring the brain. Bear, Connors, Paradiso. Baltimore: Williams & Wilkins, 2001
The Human Brain. Nolte. 4th Ed, C. V. Mosby Co., St Louis, Washington D.C., Toronto, 1999

NEUR 3902 **Neuroscience: Motor Systems & Behav. Adv**

6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr Vladimir Balcar. **Session:** Semester 1. **Classes:** 2 lec/wk, 3 prac per fortnight, 3 tut per fortnight. Advanced students may be exempt from attending some of these classes to permit meetings with supervisor. **Assumed Knowledge:** ANAT2010 and PHSI2005 is assumed knowledge. **Prerequisites:** For BMedSc students: Credit average in BMED(2801 or 2503) and BMED(2806 or 2505)

For other students: Credit average in (PHSI(2101 or 2001 or 2901 or 2005 or 2905) or ANAT(2003 or 2010)) and 6 credit points of MBLG. **Prohibitions:** NEUR3002 and PHSI3001. **Assessment:** Two 1 hour exams, 1 prac report, tutorial papers, 1 research or library essay (research essay will replace some other assessment items from regular course).

NB: Permission from the coordinators is required for entry into this course. It is strongly recommended that students also take unit NEUR3001 orNEUR3901.

This unit of study is an extension of NEUR3002 for talented students with an interest in Neuroscience and research in this field. The lecture/practical component of the course is run in conjunction with NEUR3002. The aim of this course is to provide students with an introduction to the structure and function of the nervous system. Our current knowledge of how the brain works is based on the analysis of the normal structure of the nervous system and its pathways, the functional effects of lesions and neurological diseases in different parts of the nervous system, and the way that nerve cells work at the molecular, cellular and integrative level. This course focuses on to the neural circuits and the mechanisms that control somatic and autonomic motor systems, motivated behaviours, emotions, and other higher order functions. The lecture series addresses the different topics, each of which offers special insight into the function of the nervous system in health and disease.

Textbooks

Principles of Neural Science. Kandel, Schwartz, Jessel. 4th Ed, Elsevier, NY, 2000 or Neuroscience: Exploring the brain. Bear, Connors, Paradiso. Baltimore: Williams & Wilkins, 2001

The Human Brain. Nolte. 4th Ed, C.V. Mosby Co., St Louis, Washington D.C., Toronto, 1999

NEUR 3003 **Cellular and Developmental Neuroscience**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. Dr Kevin Keay and Dr Catherine Leamey. **Session:** Semester 2. **Classes:** 3 lee plus lhr tut or 2hr prac/wk. **Assumed Knowledge:** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **Prerequisites:** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. **Prohibitions:** NEUR3903, PHSI3002, PHSI3902. **Assessment:** One 1 hr exam. Major essay/report.

NB: Enrollment in NEUR3004/3904 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.

This second semester unit is designed to introduce students to "cutting edge" issues in the neurosciences. This course is a combination of small lectures on current issues in cellular and developmental neuroscience and a research-based laboratory or library project. Issues covered in the lecture series will include the role of glial on cerebral blood flow and neural transmission, neurochemistry and psychiatric disorders and development of central and peripheral nervous system.

Textbooks

Kandell, Schwartz and Jessell "Principles of Neural Science" 4th edition.

NEUR 3903 **Cellular & Developmental Neurosci. (Adv)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. Dr Kevin Keay and Dr Catherine Leamey. **Session:** Semester 2. **Classes:** 3 lee plus 1 tut or 2 prac/wk. **Assumed Knowledge:** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **Prerequisites:** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. Plus, students must have a CREDIT (or better) in NEUR3001/3901 and NEUR3002/3902. **Prohibitions:** NEUR3003, PHSI3002, PHSI3902. **Assessment:** One 1 hr exam. Major essay/report. Mini-lecture.

NB: Department permission required for enrolment. Enrollment in NEUR3004/3904 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.

Students must receive permission from the coordinators for enrollment.

This unit encompasses the material taught in NEUR3003. Advanced students prepare and present a mini-lecture on a current topic in neuroscience research.

Textbooks

Kandell, Schwartz and Jessell "Principles of Neural Science" 4th edition.

NEUR 3004 **Integrative Neuroscience**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. Dr Kevin Keay and Dr Catherine Leamey. **Session:** Semester 2. **Classes:** 0-lhr lec plus 2 tut plus 1-2 small meeting/lab per wk. **Assumed Knowledge:** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **Prerequisites:** For BMedSci: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. **Prohibitions:** NEUR3904, PHSI3002, PHSI3902. **Assessment:** One 1 hr exam. Major essay/report. Tutorial participation.

NB: Enrollment in NEUR3003/3903 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.

This second semester unit is designed to introduce students to "cutting edge" issues in the neurosciences and to be taken in conjunction with NEUR3003/3903. This course is a combination of small group lectures on current issues in neuroscience, seminar groups and a research-based laboratory or library project. Seminars will be held on topics including imaging pain, emotions, cortical development & plasticity, colour vision, stroke and hypertension, long-term regulation of blood pressure, auditory hallucinations and the "cocktail party effect".

Textbooks

Kandell, Schwartz and Jessell "Principles of Neural Science" 4th edition.

NEUR 3904 **Integrative Neuroscience (Advanced)**

6 credit points. B A, B Com, B Com (Liberal Studies), B Com, LL B, B E, B Ec Soc Sc, B Ec Soc Sc, LL B, B Ed (Sec), B Sc, B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. Dr Kevin Keay and Dr Catherine Leamey. **Session:** Semester 2. **Classes:** 1 lec, 2 tut, 1-2 small meeting/lab per wk. **Assumed Knowledge:** Students should be familiar with the material in Bear, Connors & Paradiso Neuroscience: Exploring the Brain. **Prerequisites:** For BMedSCI: 42 credit points of intermediate BMed units. For others: 18 credit points of Intermediate science units of study from Anatomy & Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Physiology, Psychology or Statisitics. Plus, students must have a CREDIT (or better) in NEUR3001/3901 and NEUR3002/3902. **Prohibitions:** NEUR3004, PHSI3002, PHSI3902. **Assessment:** One 1 hr exam. Major essay/report. Tutorial participation. Mini-Lecture.

NB: Department permission required for enrolment. Enrollment in NEUR3003/3903 is HIGHLY RECOMMENDED. Courses are designed to be taken in conjunction with each other.

Students must receive permission from the coordinators for enrollment.

This unit encompasses the material taught in NEUR3004. Advanced students prepare and present a mini-lecture on a current topic in neuroscience research.

Textbooks

Kandell, Schwartz and Jessell "Principles of Neural Science" 4th edition.

PHSI 3005 **Human Cellular Physiology: Theory**

6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr William Phillips. **Session:** Semester 1. **Classes:** 3 lec, 1 tut/wk. **Assumed Knowledge:** 6 credit points of MBLG. **Prerequisites:** Except for BMedSc students: PHSI(2005 or 2905) and PHS(I2006 or 2906)

For BMedSc: BMED (2801 and 2802). **Prohibitions:** PHSI3905, PHSI3004, PHSI3904. **Assessment:** One 2 hr exam, one 2000w essay.

The aim of this unit of study is to examine key cellular processes involved in the growth, maintenance and reproduction of human life. Processes to be studied include the regulation of cell division and differentiation in developing and adult tissues, the regulation of body fluids through ion transport across epithelia, mechanisms of hormonal and nervous system signaling. Lectures will relate the molecular underpinnings to physiological functions: our current interpretation of how ion channels, hormone receptors and exocytotic complexes mediate tissue function and human life. The significance of these molecular mechanisms will be highlighted by considering how mutations and other disorders affect key proteins and genes and how this might lead to disease states such as cancer, intestinal and lung transport disorders and osteoporosis.

Textbooks

Molecular Biology of the Cell 4th Edn (Ed. Bruce Alberts, Publ. Garland Science)

PHSI 3905 **Human Cellular Physiology (Adv): Theory**

6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr William D. Phillips. **Session:** Semester 1. **Classes:** 3 lec, 1 tut/wk. **Assumed Knowledge:** 6 credit points of MBLG. **Prerequisites:** Credit average in PHSI(2005 or 2905) and PHS(2006 or 2906) or in BMED (2801 and 2802). Students enroling in this unit should have a SciWAM of at least 68. **Prohibitions:** PHSI3005, PHSI3004, PHSI3904. **Assessment:** One 2 hr exam, one 2000w report based on a mentored research project.

NB: Department permission required for enrolment. It is highly recommended that this unit of study be taken in combination with PHSI3906

The aim of this unit of study is to examine key cellular processes involved in the growth, maintenance and reproduction of human life. Processes to be studied include the regulation of cell division and differentiation in developing and adult tissues, the regulation of body fluids through ion transport across epithelia, mechanisms of hormonal and nervous system signaling and the regulation of muscle contraction. Lectures will relate the molecular underpinnings to physiological functions: our current interpretation of how ion channels, hormone receptors and exocytotic complexes mediate tissue function and human life. The significance of these molecular mechanisms will be highlighted by considering how mutations and other disorders affect key proteins and genes and how this might lead to disease states such as cancer, intestinal and lung transport disorders and osteoporosis. Please see the Physiology website for details of mentored Advanced research topics.

Textbooks

Molecular Biology of the Cell 4th Edn (Ed. Bruce Alberts, Publ. Garland Science)

PHSI 3006 **Human Cellular Physiology: Research**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr William D. Phillips. **Session:** Semester 1. **Classes:** 2 small group PBL, 1 lec/wk; 3 hr prac in some weeks. **Prerequisites:** Except for BMedSc students: PHSI (2005 or 2905) and PHSI(2006 or 2906)
For BMedSc: BMED (2801 and 2802). **Prohibitions:** PHSI3906, PHSI3004, PHSI3904. **Assessment:** One 1.5h exam, PBL assessments by oral presentations and paper summaries, prac reports.
NB: It is strongly recommended that students take PHSI3006 only in combination with PHSI3005. Students should contact the Physiology office to register for PBL and practical classes.
This unit of study complements, and should be taken together with PHSI3005. PHSI3006 focuses deeply upon certain areas of cellular physiology that have particular relevance to human health and disease. In the problem-based learning (PBL) sessions groups of students work together with the support of a tutor to develop and communicate an understanding of mechanism underlying the physiology and pathophysiology of disorders such as cystic fibrosis and vitamin D resistance. Each problem runs over three weeks with two small group meetings per week. Reading lists are structured to help address written biomedical problems. Lectures provide an introduction to the biological and clinical features of the problem and advice on how to interpret scientific data of the type found in the research papers. Practical classes will emphasize experimental design and interpretation. Collectively, the PBL, lectures and practical classes aim to begin to develop skills and outlook needed to deal with newly emerging biomedical science.
Textbooks
Molecular Biology of the Cell 4th Edn (Ed. Bruce Alberts, Publ. Garland Science)

PHSI 3906 **Human Cellular Physiology (Ad): Research**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Dr William D. Phillips. **Session:** Semester 1. **Classes:** 2 small group PBL, 1 lec/wk; 3hs prac certain weeks. **Assumed Knowledge:** 6 credit points of MBLG. **Prerequisites:** Credit average in PHSI (2005 or 2905) and PHSI(2006 or 2906) or in BMED (2801 and 2802). Students enroling in this unit should have a SciWAM of at least 68. **Prohibitions:** PHSI3006, PHSI3004, PHSI3904. **Assessment:** One 1.5h exam, four PBL assessments by oral presentations and paper summaries, 1500w research report.
NB: Department permission required for enrolment. It is highly recommended that this unit of study be taken only in combination with PHSI3905
This unit of study complements, and should be taken together with PHSI3005. PHSI3006 focuses deeply upon certain areas of cellular physiology that have particular relevance to human health and disease. In the problem-based learning (PBL) sessions groups of students work together with the support of a tutor to develop and communicate an understanding of mechanism underlying the physiology and pathophysiology of disorders such as cystic fibrosis and vitamin D resistance. Each problem runs over three weeks with two small group meetings per week. Reading lists are structured to help address written biomedical problems. Lectures provide an introduction to the biological and clinical features of the problem and advice on how to interpret scientific data of the type found in the research papers. Practical classes will emphasize experimental design and interpretation. Collectively, the PBL, lectures and practical classes aim to begin to develop skills and outlook needed to deal with newly emerging biomedical science. Please see the Physiology website for details of mentored Advanced research topics.
Textbooks
Molecular Biology of the Cell 4th Edn (Ed. Bruce Alberts, Publ. Garland Science)

PHSI 3007 **Heart and Circulation: Normal Function**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Irene Schneider. **Session:** Semester 2. **Classes:** 2 lee, 3hr prac or 2hr tutorial per wk. **Assumed Knowledge:** 6 credit points of MBLG. **Prerequisites:** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of Study
For BMedSc: BMED (2801 and 2803). **Prohibitions:** PHSI3907, PHSI3003, PHSI3903. **Assessment:** One 2 hr exam, two 1000w reports, one oral presentation.
NB: It is recommended that students take PHSI3007 ONLY in combination with PHSI3008.
The aim of this unit of study is to examine in depth the structure and function of the cardiovascular system at the organ system, cellular and molecular levels. There is a particular focus on exercise physiology and the way in which the heart, circulation and skeletal muscles contribute to the limits of sporting achievement. The excitability, contractility and energetics of the heart and blood vessels are studied and the regulation of these organs by local (physical and chemical) factors, hormones and the nervous system are discussed, with emphasis on cellular and molecular mechanisms. At the systemic level, short term (neural) mechanisms controlling the blood pressure and how the system behaves during exercise and other stresses is dealt with. Long term (hormonal) mechanisms regulating blood pressure via the renal control of extracellular fluid volume is also discussed. There is an emphasis in this unit of study on recent advances in cellular and molecular aspects of heart and the blood vessels and the regulation of these organs by local (physical and chemical) factors, hormones and the autonomic nervous system. Lectures will be complemented by practical classes and tutorials that reinforce the theory and emphasize experimental design, data interpretation and presentation.

PHSI 3907 **Heart & Circulation: Normal Function Adv**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Irene Schneider. **Session:** Semester 2. **Classes:** 2 lee, 3hr prac or 2hr tutorial per wk. **Assumed Knowledge:** 6 credit points of MBLG. **Prerequisites:** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of Study
For BMedSc: BMED (2801 and 2803). **Prohibitions:** PHSI3007, PHSI3003, PHSI3903. **Assessment:** One 2 hr exam, 2000w report/essay based on a mentored research project, one oral presentation.
NB: Available to selected students who have achieved an average of at least 75 in their prerequisite units of study. It is highly recommended that this unit of study be taken in combination with PHSI3908.
The aim of this unit of study is to examine in depth the structure and function of the cardiovascular system at the organ system, cellular and molecular levels. There is a particular focus on exercise physiology and the way in which the heart, circulation and skeletal muscles contribute to the limits of sporting achievement. The excitability, contractility and energetics of the heart and blood vessels are studied and the regulation of these organs by local (physical and chemical) factors, hormones and the nervous system are discussed, with emphasis on cellular and molecular mechanisms. At the systemic level, short term (neural) mechanisms controlling the blood pressure and how the system behaves during exercise and other stresses is dealt with. Long term (hormonal) mechanisms regulating blood pressure via the renal control of extracellular fluid volume is also discussed. There is an emphasis in this unit of study on recent advances in cellular and molecular aspects of heart and the blood vessels and the regulation of these organs by local (physical and chemical) factors, hormones and the autonomic nervous system. Lectures will be complemented by practical classes and tutorials that reinforce the theory and emphasize experimental design, data interpretation and presentation. Details of mentored Advanced research projects are available on the Physiology website.

PHSI 3008 **Heart and Circulation: Dysfunction**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Irene Schneider. **Session:** Semester 2. **Classes:** 2 lee, 2 seminar session. **Assumed Knowledge:** 6 credit points of MBLG. **Prerequisites:** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of Study
For BMedSc: BMED (2801 and 2803). **Prohibitions:** PHSI3908, PHSI3003, PHSI3903. **Assessment:** One 2 hr exam, seminar presentations, 2000wd essay.
NB: It is strongly recommended that students take PHSI3008 ONLY in combination withPHSI3007
This unit of study complements and should be taken together with PHSI3007, which deals with the normal function of the cardiovascular system. This unit of study focuses on cardiovascular disease which is a major cause of death in western society. Lectures provide the background to understanding (a) the disruption of normal physiological processes, (b) recent advances in cellular and molecular aspects, and (c) the physiological basis of modern approaches to treatment. Example of diseases covered include: heart failure, heart attack, cardiac hypertrophy, atheroma and hypertension. In the seminar sessions, students will work in small groups with a tutor to further extend their understanding of cellular and molecular mechanisms underpinning cardiovascular disease. Reading lists are organized into specific topics related to a particular disease. Through analysis and discussion of the readings students develop skills necessary for interpreting and communicating science.

PHSI 3908 **Heart & Circulation: Dysfunction Adv**
6 credit points. B Med Sc, B Sc, UG Study Abroad Program. Irene Schneider. **Session:** Semester 2. **Classes:** 2 lee, 2 seminar session. **Assumed Knowledge:** 6 credit points of MBLG. **Prerequisites:** Except for BMedSc students: PHSI(2005 or 2905) and PHSI(2006 or 2906) plus at least 12 credit points of intermediate Science Units of Study
For BMedSc: BMED (2801 and 2803). **Prohibitions:** PHSI3008, PHSI3003, PHSI3903. **Assessment:** One 2 hr exam, seminar presentations, 2000wd essay
based on mentored research project.
NB: Available to selected students who have achieved an average of at least 75 in their prerequisite units of study. It is highly recommended that this unit of study be taken ONLY in combination with PHSI3907 or PHSI 3007.
This unit of study complements and should be taken together with PHSI3007, which deals with the normal function of the cardiovascular system. This unit of study focuses on cardiovascular disease which is a major cause of death in western society. Lectures provide the background to understanding (a) the disruption of normal physiological processes, (b) recent advances in cellular and molecular aspects, and (c) the physiological basis of modern approaches to treatment. Example of diseases covered include: heart failure, heart attack, cardiac hypertrophy, atheroma and hypertension. In the seminar sessions, students will work in small groups with a tutor to

further extend their understanding of cellular and molecular mechanisms underpinning cardiovascular disease. Reading lists are organized into specific topics related to a particular disease. Through analysis and discussion of the readings students develop skills necessary for interpreting and communicating science. Details of mentored Advanced research projects are available on the Physiology website.

Physiology Honours
During fourth year, no formal series of lectures is provided but students are given a relevant problem to investigate. This problem usually represents a small facet of one of the major current research projects within the Department, and the students work in collaboration with members of the staff. Students write a thesis embodying the results of their work.

Plant Science
The following units of study form part of the new Plant Science program, which has been developed jointly by the Faculty of Agriculture, Food and Natural Resources and the School of Biological Sciences.
Senior units of study and a major in Plant Science will be made available in 2006, and students will be able to count PLNT units towards a major in either Plant Science or Biology.

Intermediate units of study

PLNT 2001 **Plant Biochemistry and Molecular Biology**
6 credit points. B A, B Anim Sc, B Hort Sc, B L W Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), B Sc Agr, UG Study Abroad Program. Prof Les Copeland (Coordinator), Dr Rosanne Quinnell. **Session:** Semester 1. **Classes:** 2 hr lee, 3 hr practical/wk. **Prerequisites:** 12 credit points of Junior Chemistry and 12 credit points of Junior Biology (or with the Dean's permission BIOL1201 and BIOL1202). **Prohibitions:** PLNT2901, AGCH200L. **Assessment:** quizzes + theory of prac test (25%), laboratory reports (25%), final examination (50%).
This unit of study explores the fundamentals of plant biochemistry, from what plants are made of to how plants regulate their metabolic processes. The specialised nature of these metabolic processes, which enable plants to respond to different biotic and abiotic environmental influences, is featured as is their relationship to food, feed and fibres. The unit covers basic chemistry and metabolic reactions of the main plant constituents, how storage reserves are mobilized to provide energy and substrates for growth and development, and how metabolic pathways are controlled and respond to influences from the plant environment. Special attention is given to these processes in economic plants, and their relevance to foods and fibres. The unit of study complements intermediate units of study in plant science, molecular and cell biology, genetics and biotechnology, and leads on to senior plant modules offered through the School of Biological Sciences and the Faculty of Agriculture, Food and Natural Resources. Learning in the unit is by lectures and laboratory work, augmented by self-directed learning related to the lecture and practical classes and discussions to provide insights into how molecular and biochemical approaches lead to understanding of plant functions. Students will be expected to access the WebCT site regularly for information.
Textbooks
A Study Guide for the unit will be available for purchase from the Copy Centre at a cost of $10 during the first week of Semester.

PLNT 2901 **Plant Biochem & Molecular Biology (Adv)**
6 credit points. B A, B Anim Sc, B Hort Sc, B L W Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), B Sc Agr, UG Study Abroad Program. Prof Les Copeland (Coordinator), Dr Rosanne Quinnell. **Session:** Semester 1. **Classes:** (3 lee or tut; 3 prac or sem)/wk. **Prerequisites:** A Distinction average in 12 credit points of Junior Chemistry and 12 credit points of Junior Biology (or with the Dean's permission BIOL1201 and BIOL1202). **Prohibitions:** PLNT2001, AGCH2001. **Assessment:** One 2-hr exam (50%), laboratory reports (10%) independent research project presentation and report (25%), self-directed learning exercises (15%).
The content will be based on PLNT2001 but qualified students will participate in alternative components at a more advanced level.
Textbooks
A Study Guide for the unit will be available for purchase from the Copy Centre at a cost of $10 during the first week of Semester.

PLNT 2002 **Aust Flora: Ecology and Conservation**
6 credit points. B A, B Agr Ec, B An Vet Bio Sc, B Anim Sc, B Hort Sc, B L W Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), B Sc Agr, UG Study Abroad. Dr Glenda Wardle & Dr Murray Henwood. **Session:** Semester 1. **Classes:** (2 lee & 3 prac)/wk, audiovisual. **Prerequisites:** One of BIOL1001, BIOL1101, BIOL1901; One of BIOL1002, BIOL1003, BIOL1902, BIOL1903, LWSC1002. (With the Dean's permission BIOL1201 and BIOL1202 may be substituted for the above.). **Prohibitions:** PLNT2902, BIOL2004 or BIOL2904.. **Assessment:** One 2-hr exam (40%), laboratory reports (20%) herbarium (20%), one 2-hr practical exam (20%).
This unit provides a broad understanding of the evolution, classification and diversity of terrestrial plants and the principles of plant ecology in an Australian context. The major types of Australian vegetation are discussed across a range of temporal and spatial scales, and their current distribution related to their environment and origins. Selected contemporary issues in plant conservation from Australian natural and managed systems are explored. There is a strong emphasis on practical skills such as phylogenetic inference, plant identification and the collection and analysis of ecological data. The practical component of the unit of study uses examples taken from the Australian flora (including plants of horticultural significance) and major crop plants. Important elements of this unit are half-day field trips to the Royal National Park (or production systems at Camden), the Royal Botanic Gardens Sydney and the construction of student herbaria. The unit of study complements intermediate units of study in plant science, zoology, molecular and cell biology, genetics and biotechnology, and leads on to advanced plant and ecology modules offered through the School of Biological Sciences and the Faculty of Agriculture, Food and Natural Resources.
Textbooks
A Laboratory Manual for the unit will be available for purchase from the Copy Centre during the first week of Semester.

PLNT 2902 **Aust Flora: Ecology & Conservation (Adv)**
6 credit points. B A, B Anim Sc, B Hort Sc, B L W Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), B Sc Agr, UG Study Abroad Program. Dr Glenda Wardle & Dr Murray Henwood. **Session:** Semester 1. **Classes:** (2 lee & 3 prac)/wk, audiovisual. **Prerequisites:** Distinction average in (one of BIOL1001, BIOL1101, BIOL1901) and (one of BIOL1002, BIOL1003, BIOL1902, BIOL1903, LWSC1002) (or with the Dean's permission BIOL1201 and BIOL1202). **Prohibitions:** PLNT2002, BIOL2004, BIOL2904.. **Assessment:** One 2-hr exam (40%), laboratory reports (20%) research project (20%), one 2-hr practical exam (20%).
Qualifed students will participate in alternative components of PLNT2002. The content and nature of these components may vary from year to year. See prerequisites for Senior units of study in Biology.
Textbooks
A Laboratory Manual for the unit will be available for purchase from the Copy Centre during the first week of Semester.

PLNT 2003 **Plant Form and Function**
6 credit points. B A, B Agr Ec, B An Vet Bio Sc, B Anim Sc, B Hort Sc, B L W Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), B Sc Agr, UG Study Abroad. A/Prof Bruce Sutton, A/Prof Robyn Overall. **Session:** Semester 2. **Classes:** 2 lectures, 1hr tutorial and 1 prac, A/V session (2-3hr) or field trip (6hr) per wk. **Assumed Knowledge:** The content of BIOL (1002 or 1902) is assumed knowledge and students entering from BIOL (1003 or 1903) will need to do some preparatory reading. **Prerequisites:** 12 credit points of Junior Biology (or with the Dean's permission), BIOL1201 and BIOL1202 or BIOL1001 and ENVI1002. **Prohibitions:** PLNT2903, BIOL2003, BIOL2903, CROP200L. **Assessment:** One 2hr theory exam (40%), prac exam (20%), anatomy project (10%), quizzes (5%), physiology report (10%), field report (15%).
This unit of study investigates the structure of cells, tissues and organs of flowering plants and relates them to function. Topics include; how photosynthesis, translocation, water transport and nutrition relate to the structures that carry out these processes. Most of the information on plant structure will be provided in self-instructional audiovisual sessions augmented by small group discussions. This is integrated with experiments carried out in the laboratory or on field excursions to investigate the physiological aspects of plant structures. There is a focus on recent advances in plant molecular biology where they have been critical in enhancing our understanding of the form and function of plants. The physiological and anatomical responses of plants to extreme environments such as drought and salinity will also be addressed. Attention will be paid to the anatomy and physiology of crop, horticultural and Australian native plants. This unit of study complements Applied Plant Biochemistry, Australian Flora: ecology and conservation and Cell Biology and leads onto senior units of study in plant sciences, including Plant Growth and Development. It is essential for those seeking a career in plant molecular biology.
Textbooks
Taiz L, Zeiger E (2002) Plant Physiology 3rd ed. Sunderland, Mass Sinauer
Recommended reading:
Atwell B, Kriedemann P, Turnbull C (1999) Plants in Action. Macmillan, South Yarra.
Buchanan BB, Gruissem W, Jones RL (2000) Biochemistry and Molecular Biology of Plants, ASPP, Rockvill, Maryland
A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of Semester.

PLNT 2903 **Plant Form and Function (Advanced)**
6 credit points. B A, B Anim Sc, B Hort Sc, B L W Sc, B Res Ec, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biology & Genetics), B Sc (Molecular Biotechnology), B Sc (Nutrition), B Sc Agr, UG Study

Abroad Program. A/Prof Bruce Sutton and A/Prof Robyn Overall. **Session:** Semester 2. **Classes:** 2 lectures, lhr tutorial and 1 prac, A/V session (2-3hr) or field trip (6hr) per wk. **Assumed Knowledge:** The content of BIOL (1002 or 1902) is assumed knowledge and students entering from BIOL (1003 or 1903) will need to do some preparatory reading. **Prerequisites:** Distinction average in 12 credit points of Junior Biology or BIOL1001 and ENVI1002 (or with the Dean's permission, BIOL1201 and BIOL1202). **Prohibitions:** PLNT2003, BIOL2003, BIOL2903, CROP2001. **Assessment:** One 2hr theory exam (40%), prac exam (20%), research project oral and written presentation (25%), field report (15%).

The content will be based on PLNT2003 but qualified students will participate in alternative components at a more advanced level. The content and nature of these components may vary from year to year.

Textbooks

Taiz L, Zeiger E (2002) Plant Physiology 3rd ed. Sunderland, Mass Sinauer

Recommended reading:

Atwell B, Kriedemann P, Turnbull C (1999) Plants in Action. Macmillan, South Yarra.

Buchanan BB, Gmissem W, Jones RL (2000) Biochemistry and Molecular Biology of Plants, ASPP, Rockvill, Maryland

A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of Semester.

Senior units of study

PLNT 3001 **Plant, Cell and Environment**

6 credit points. B A, B Hort Sc, B L W Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biotechnology), B Sc (Nutrition), B Sc Agr, UG Study Abroad Program. Dr Rosanne Quinnell and A/Prof Bruce Sutton. **Session:** Semester 2. **Classes:** (2-3 workshops, 2-3 prac)/wk. **Prerequisites:** 12 credit points of Intermediate Biology, Plant Science, Molecular Biology and Genetics or equivalent. **Prohibitions:** PLNT 3901. **Assessment:** One 2hr exam (50%), 2 lab reports (50%).

This unit of study of comprises workshops and practical sessions that will be guided largely by current directions in plant science research in Australia. Theme areas will be identified and used to direct the workshops and discussions conducted throughout the semester. We expect students to be able to span levels of plant organisation: molecular, cellular, tissues, organs, whole organism physiology and ecology. Theme areas for discussion will consider the Australian flora and the areas currently under investigation at the University of Sydney. Students will need to draw on knowledge from Intermediate units of study and will be expected to explore the published literature in order to successfully integrate information and participate in workshops and discussions. The practical component of this unit of study has sufficient flexibility for students to design their own group experiments to answer questions raised during the workshops. A range of equipment for student experiments will be available including: pulse amplitude modulated (PAM) fluorometer; oxygen electrodes; Scholander bomb, gel electrophoresis (PAGE).

PLNT 3901 **Plant, Cell and Environment (Advanced)**

6 credit points. B A, B Hort Sc, B L W Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), B Sc (Molecular Biotechnology), B Sc (Nutrition), B Sc Agr, UG Study Abroad Program. Dr Rosanne Quinnell and A/Prof Bruce Sutton. **Session:** Semester 2. **Classes:** (2 -3 workshops; 2 - 3 prac)/wk. **Prerequisites:** 12 credit points of Intermediate Biology, Plant Science, Molecular Biology and Genetics or equivalent. **Prohibitions:** PLNT3001. **Assessment:** One 2-hr exam (50%), 1 research report (50%).

NB: Department permission required for enrolment. Entry is restricted and is based on a combination of a high WAM and student motivation.

The purpose of this unit of study is to develop an understanding of current directions in Plant Science. The unit of study of comprises workshops and an advanced research project; these will be guided by current directions in plant science research in Australia. Theme areas will be identified and used to direct the workshops to be conducted throughout the semester. We expect students to be able to span levels of plant organisation: molecular, cellular, tissues, organs, whole organism physiology and ecology. Theme areas for discussion will consider the Australian landscape and the areas currently under investigation at the University of Sydney. Students will need to draw on knowledge from Intermediate units of study and will be expected to explore the published literature in order to successfully integrate information and participate in workshop discussions. The research project of this unit of study has sufficient flexibility for students to design their own experiments to answer questions and the research project will align closely with work being undertaken at the University of Sydney. A range of equipment for advanced experiments will be available including: pulse amplitude modulated (PAM) fluorometer; oxygen electrodes; Scholander bomb, gel electrophoresis (PAGE), specialised equipment housed in research laboratories.

PLNT 3002 **Plant Growth and Development**

6 credit points. B Hort Sc, B L W Sc, B Sc Agr, UG Study Abroad Program. A/Prof Robyn Overall. **Session:** Semester 2. **Classes:** (3 lee, 0-3 hr prac)/wk. **Prerequisites:** 12 credit points of intermediate PLNT, BIOL, AGCH or CROP units of study including at least one of PLNT 2001, PLNT 2901, PLNT 2003, PLNT 2903, BIOL 2016, BIOL 2916, BIOL 2003, BIOL 2903, BIOL 2006, BIOL 2906, CROP 2001, AGCH 2002 or equivalent. **Prohibitions:** PLNT 3902, BIOL 3021, BIOL 3931.. **Assessment:** One 2 hr exam (60%), project presentation and report (20%), laboratory quizzes, report and book (20%).

This unit explores the mechanisms underlying plant growth and development from seed to maturity. It covers the process of building the plant body from embryogenesis, development and operation of meristems, polarity, patterning, controls of flowering and fruit development to programmed cell death and senescence. It includes the role of signals such as plant hormones in coordinating plant growth and development and the molecular and cellular mechanisms underlying plant responses to environmental signals such as gravity and light. There is a focus on recent plant molecular biology that has been critical in enhancing our current understanding of plant growth and development. The unit uses examples from crop, horticultural and native plants as well as the model plant Arabidopsis. Lectures are augmented by experimental work, including and independent research project. The laboratory work will include plant tissue culture, protoplast production and modern cell biological techniques used to study plant development. This unit of study complements other senior units of study in the Plant Science Major and is essential for those seeking a career in plant molecular biology.

Textbooks

Taiz L, Zeiger E (2002) Plant Physiology 3rd ed. Sunderland, Mass Sinauer

Recommended reading:

Atwell B, Kriedemann P, Turnbull C (1999) Plants in Action. Macmillan, South Yarra.

Buchanan BB, Gmissem W, Jones RL (2000) Biochemistry and Molecular Biology of Plants, ASPP, Rockvill, Maryland

A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of Semester.

PLNT 3902 **Plant Growth and Development (Advanced)**

6 credit points. B Hort Sc, B L W Sc, B Sc Agr, UG Study Abroad Program. A/Prof Robyn Overall. **Session:** Semester 2. **Classes:** (3 lee, 0-3 hr prac)/wk. **Prerequisites:** Distinction average in 12 credit points of intermediate PLNT, BIOL, AGCH or CROP units of study including at least one of PLNT 2001, PLNT 2901, PLNT 2003, PLNT 2903, BIOL 2016, BIOL 2916, BIOL 2003, BIOL 2903, BIOL 2006, BIOL 2906, CROP 2001, AGCH 2002 or equivalent. These requirements may be varied and students with lower averages should consult the unit coordinator. **Prohibitions:** PLNT 3002, BIOL 3021, BIOL 3931.. **Assessment:** One 2 hr exam (60%), project presentation and report (30%), laboratory quizzes and book (10%).

Qualified students will participate in alternative components of PLNT 3002 Plant Growth and Development, representing 30% of the total assessment. The students will be exempt from one standard laboratory report and the standard independent group project. Instead, the students will conduct an advanced independent individual practical or theoretical research project under the supervision of a member of the academic staff. The program includes a formal presentation of the results of the project in verbal and written reports.

Textbooks

Taiz L, Zeiger E (2002) Plant Physiology 3rd ed. Sunderland, Mass Sinauer

Recommended reading:

Atwell B, Kriedemann P, Turnbull C (1999) Plants in Action. Macmillan, South Yarra.

Buchanan BB, Gmissem W, Jones RL (2000) Biochemistry and Molecular Biology of Plants, ASPP, Rockvill, Maryland

A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of Semester.

PLNT 3003 **Systematics and Evolution of Plants**

6 credit points. B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. Dr Murray Henwood. **Session:** Semester 1. **Classes:** 2 lee, one 3hr prac/week. **Assumed Knowledge:** BIOLQ001 or 1101 or 1901 or 1002 or 1902 or 1904). **Prerequisites:** PLNT (2002 or 2902) or equivalent. **Prohibitions:** BIOL3015, BIOL3915, PLNT3903. **Assessment:** One 1.5 hr take-home exam (50%), oral presentation (5%), nomenclature exercise (15%), research project (30%).

This unit of study introduces students to the practical aspects of Plant Systematics and evolution. Students will gain a working knowledge of the general techniques and approaches used in Plant Systematics (including an understanding of plant taxonomy, phylogenetics and evolutionary processes). A range of data sources (DNA sequences and morphology) will be used to address questions concerning the evolution, classification and historical biogeography of various plant groups. A two-day field trip will provide tuition in plant identification and an opportunity to acquire skills in field-botany . This unit of study is recommended for students with an interest in the areas of: field biology, bioinformatics, general ecology and evolution.

Textbooks

Plant Systematics: A phylogenetic Approach (2002). W.S. Jud, C.S. Campbell, E.A. Kellog, PR Stevens & M.J. Donohuge

PLNT 3903 **Systematics and Evolution of Plants Adv**

6 credit points. B Med Sc, B Med Sc, M B, B S, B Sc, B Sc (Adv), M B, B S, UG Study Abroad Program. Dr Murray Henwood. **Session:** Semester 1. **Classes:** 2 lectures & 1 prac/wk. **Assumed Knowledge:** BIOL 1001 or BIOL 1101 or BIOL 1901 or BIOL 1002 or BIOL 1902 or BIOL 1904. **Prerequisites:** Distinction in PLNT 2002 or PLNT 2902 (or equivalent). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibitions:** BIOL3015/3915 or PLNT3003. **Assessment:** One 1.5 hr take-home exam (50%), oral presentation (5%), nomenclature exercise (15%), research project (30%).

Qualified students will participate in alternative components of PLNT3003 Systematics and Evolution of Plants. The content and nature of these components may vary from year to year.
Textbooks
Plant Systematics: A phylogenetic Approach (2002). W.S. Jud, C.S. Campbell, E.A. Kellog, PF. Stevens & M.J. Donohuge

BIOL 3009 **Terrestial Field Ecology**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Glenda Wardle (UEO), Prof Christopher Dickman, Dr Dieter Hochuli, Dr Clare McArthur. **Session:** S2 Intensive. **Classes:** 6 day field trip, 10 lectures and 2 tutorials. **Assumed Knowledge:** Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly recommended. **Prerequisites**: 12 credit points of intermediate level Biology. **Prohibitions:** BIOL (3909, 3041, 3941, 3042, 3942, 3024, 3924).. **Assessment:** Discussions and quiz (10%), research project proposal and brief presentation (10%), sampling project report (20%), specimen collection (10%), research project report (50%).
NB: Dates: Sunday 16 July to Friday 21 July 2006
This field course provides practical experience in the experimental analysis of terrestrial populations and assemblages. Students learn a broad range of ecological sampling techniques and develop a detailed understanding of the logical requirements necessary for manipulative ecological field experiments. The field work incorporates survey techniques for plants, small mammals and invertebrates and thus provides a good background for ecological consulting work. Students attend a week-long field course and participate in a large-scale research project as well as conducting their own research project. Invited experts contribute to the lectures and discussions on issues relating to the ecology, conservation and management of Australia's terrestrial flora and fauna.

BIOL 3909 **Terrestial Field Ecology (Advanced)**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr Glenda Wardle (UEO), Prof Christopher Dickman, Dr Dieter Hochuli, Dr Clare McArthur. **Session:** S2 Intensive. **Classes:** 6 day field trip, 10 lectures and 2 tutorials. **Assumed Knowledge:** Ecological Methods (BIOL 3006) or Ecological Methods (advanced) BIOL 3906. Prior completion of one of these units is very strongly recommended. **Prerequisites:** Distinction average in 12 credit points of intermediate level Biology. **Prohibitions:** BIOL (3009, 3041, 3941, 3042, 3942, 3024, 3924).. **Assessment:** Discussions and quiz (10%), research project proposal and brief presentation (10%), sampling project report (20%), specimen collection (10%), research project report (50%).
NB: Dates: Sunday 16 July to Friday 21 July 2006
This unit has the same objectives as BIOL 3009 Terrestrial Field Ecology, and is suitable for students who wish to pursue certain aspects in greater depth. Entry is restricted, and selection is made from the applicants on the basis of their previous performance. Students taking this unit of study will participate in alternatives to some elements of the standard course and will be required to pursue the objectives by more independent means. Specific details of this unit of study and assessment will be announced in meetings with students at the beginning of the unit. This unit of study may be taken as part of the BSc (Advanced) program.

BIOL 3017 **Fungal Biology**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr P McGee. **Session:** Semester 1a. **Classes:** 5 lee & 15 prac in a two week intensive program immediately prior to semester one (labs run from 20 February to 3 March 2006), plus the equivalent of 30hrs self-guided study during the semester. **Prerequisites:** 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. **Prohibitions:** BIOL3917. **Assessment:** One 2hr take home exam, laboratory and written assignments.
NB: The completion of 6 credit points ofMBLG units is highly recommended.
Students interested in fungal ecology, environmental and rehabilitation biology, fungal biodiversity, biological control and soil microbiology will study the structure and function of fungi. Emphasis will be placed on the benefit provided by fungi in symbiotic interactions with plants, including mycorrhizal fungi and shoot-borne endophytes. Physiological and ecological implications of the interactions will also be examined, emphasising the use of these interactions in vegetation restoration and biocontrol of pests and pathogens. Students will be encouraged to develop a deeper understanding of one area of Fungal Biology through independent study. Part of the learning material will be available on the internet.

BIOL 3917 **Fungal Biology (Advanced)**

6 credit points. B A, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Marine Science), UG Study Abroad Program. Dr P McGee. **Session:** Semester 1a. **Classes:** 5 lee & 15 prac in a two week intensive program immediately prior to semester one (from 20 February to 3 March 2006), plus the equivalent of 30hrs self-guided study during the semester. **Prerequisites:** Distinction average in 12 credit points of Intermediate Biology, or 6 credit points of Intermediate Biology and 6 Intermediate credit points of either Microbiology or Geography, or their equivalent. **Prohibitions:** BIOL3017. **Assessment:** One 2hr take home exam, laboratory and written assignments.
NB: The completion of 6 credit points ofMBLG units is highly recommended.
Qualified students will participate in alternative components of BIOL3017 Fungal Biology. The content and nature of the components will vary each year, but will include individual research on a topic agreed on with the executive officer.

PPAT 3003 **Plant Disease**

6 credit points. B Hort Sc, B L W Sc, B Sc, B Sc Agr, UG Study Abroad Program. Prof Lester Burgess and Prof David Guest. **Session:** Semester 1. **Classes:** (2 lee, 3 hr practical classes)/wk. **Prerequisites:** Two of PLNT2001, PLNT 2901, PLNT 2002, PLNT 2902, PLNT 2003, PLNT 2903, MICR 2024 or MICR 2026. **Assessment:** Written exam 2 hr (60%), 12 Quizzes (15%), Group project report (25%).
This unit introduces fungi and other microbes as causes of plant disease that limit agricultural and horticultural production. The practical component introduces techniques used in handling and identifying fungi, and in studying plant disease. Emphasis is placed on the design of experiments and interpretation of experimental data. Topics include symptoms and diagnosis of plant disease; the biology, epidemiology and management of fungi and other microbes that cause plant disease; breeding for disease resistance; plant-parasite relationships; and disease resistance in plants.
Textbooks
Brown JF and Ogle HJ. 1997. Plant Pathogens and Plant Diseases. Rockvale Publications.

HORT 3005 **Production Horticulture**

6 credit points. B Hort Sc, B L W Sc, B Sc, B Sc Agr, UG Study Abroad Program. Dr Jenny Jobling. **Session:** Semester 1. **Classes:** (2 lee, 3 labs/seminars/workshops)/wk. **Assumed Knowledge:** HORT 1001, HORT 1002 and HORT 2002. **Prerequisites:** Two of PLNT 2001, PLNT 2901, PLNT 2002, PLNT 2902, PLNT 2003, PLNT 2903. **Assessment:** One 3 hr exam (55%), Assignments (45%) ie Fruit crops 15%, Vegetables 15%, Tropical and Environmental
Horticulture 15%.
Emphasis is given to the scientific basis for fruit and winegrape production and to sustainable vegetable crop production and tropical horticultural crops. Concepts underlying the establishment of and management of urban plants and use are addressed. The unit develops skills in the evaluation of technical and environmental status of established orchards, vineyards, vegetable crops and urban plantings.

HORT 3004 **Postharvest Biology and Technology**

6 credit points. B Hort Sc, B L W Sc, B Sc, B Sc (Bioinformatics), B Sc (Environmental), B Sc (Molecular Biology & Genetics), B Sc Agr, UG Study Abroad Program. Dr Robyn McConchie. **Session:** Semester 1. **Classes:** (2 lee, 3-4 labs/seminars/workshops)/wk. **Assumed Knowledge:** HORT 1001, HORT 1002 and HORT 2002. **Prerequisites:** Two of PLNT 2001, PLNT 2901, PLNT 2002, PLNT 2902, PLNT 2003, PLNT 2903. **Assessment:** Exam 2 hr (60%), Laboratory Reports (25%), Assignment (10%), Seminar (5%).
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. Supply chain analysis of crops will be examined via case study examples, drawn from fruits, vegetables, cut flowers, nursery and foliage crops, turf and edible fungi. Students will study all operations from harvesting to consumer evaluation.
Textbooks
Wills, R., McGlasson, B., Graham, D. and Joyce, D. "Postharvest: An Introduction to the Physiology and Handling of Fruit, Vegetables and Ornamentals." UNSW Press 4th Edition

AGRO 3002 **Agronomy 3**

6 credit points. B Agr Ec, B An Vet Bio Sc, B Hort Sc, B L W Sc, B Res Ec, B Sc, B Sc Agr, UG Study Abroad Program. A/Prof Bruce Sutton. **Session:** Semester 1. **Classes:** 5 student contact hrs/wk, workshops and discussions (36 hr total), labs (26 hr total). **Assumed Knowledge:** CROP 1001 or HORT 1001 or LWSC 1001. **Prerequisites:** PLNT 2003 or PLNT 2903. **Assessment:** One 2 hour exam, consultancy report, practical reports.
Agronomy studies the practices and underlying concepts of sustainable crop and pasture production. The scientific basis of modern practices used in crop production, particularly those relevant to New South Wales, is explored. This knowledge is used to appreciate the scale of future problems such as climate change, soil degradation and increased costs of petrochemical-based inputs like fuel and fertilizer. Possible responses to these problems that will help maintain productivity will be examined. The relationship between agricultural production and natural resource management is also considered as part of a modern production environment, with the impact of recent legislation supporting Ecologically Sustainable Development on agriculture and the agricultural response to it as the focus of discussion. The practical classes will develop key skills appropriate to precision agriculture and use of current decision support systems.

Psychology

Psychology is the study of behaviour and it is approached on a scientific basis, with provision for professional training at the postgraduate level. The research activities of the School cover almost all of the main branches of the subject.

Extensive information about the subject and the School is available on the School web-site: www.psych.usyd.edu.au.
A normal three year sequence required for a major in Psychology is: PSYC 1001, 1002, 2011, 2012, 2013, 2014, and at least four Senior units of study selected fromPSYC3010*, 3011, 3012, 3013, 3014, 3015, 3016, 3017, 3018, 3019, and HPSC3023 . Mid-year entry is possible and involves modification of this sequence.
(*Required for entry to Fourth Year)
All units of study are 6 credit points. The units of study available are:
PSYC 1001,
PSYC 1002,
PSYC 2011,
PSYC 2012,
PSYC 2013,
PSYC 2014,
PSYC 3010,
PSYC 3011,
PSYC 3012,
PSYC 3013,
PSYC 3014,
PSYC 3015,
PSYC 3016,
PSYC 3017,
PSYC 3018,
PSYC 3019,
HPSC 3023

Registration and noticeboards

Students in all years must register during the orientation period. Psychology 1001 students register by going to the Carslaw Building during orientation and collecting a personalised computer generated timetable, or by obtaining their timetables through MyUni, which will indicate the lecture times and the tutorial group to which they have been allocated. Further information will be posted at the Enrolment Centre and on the Junior Psychology noticeboard on the 4th Floor of the Old Teachers College Building.

Enquiries

The main enquiry office of the School is Room 325, Level 3 Brennan MacCallum Building, Al 8 (tel. 9351 2872). Staff members available to discuss particular courses may be contacted directly or through this office.

Honours

In order to be eligible to enter Psychology 4 Honours, it is necessary (except as provided in the by-laws or resolutions) to gain a year average of at least Pass with Credit in Intermediate and in Senior Psychology units of study constituting a major in Psychology, and must include PSYC3010. Students wishing to graduate with Honours in Psychology are urged to discuss their choice of other subjects with a Faculty adviser as soon as practicable. There is currently a quota on entry to Psychology 4.

Examinations

Undergraduate units of study are examined at the end of each semester and include classwork by way of essays, reports or practical/laboratory work. At the beginning of each unit of study students are advised of the contributions of exam and classwork for assessment purposes.

Summer School: January-February

PSYC 1001 and PSYC 1002 are offered in the Sydney Summer School. Consult the Sydney Summer School website for more information. http://www.summer.usyd.edu.au/

PSYC 1001 **Psychology 1001**

6 credit points. B A, B Agr Ec, B E, B Ec (Soc Sc), B Ed, B A (Psych), B Ed, B Sc (Psych), B Med Sc, B Sc, B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 1, Summer. **Classes:** 3 lee & a tutorial of lhr/wk and lhr/wk of additional web-based (self-paced) material related to the tutorial (lhr/wk practical/demonstration). **Assessment:** One 2.5hr exam, one lOOOw essay, multiple tutorial tests, experimental participation.

Psychology 1001 is a general introduction to the main topics and methods of psychology, and is the basis for advanced work as well as being of use to those not proceeding with the subject. Psychology 1001 covers the following areas: subject matter and methods of psychology; basic statistics and measurement; behavioural neuroscience; applied psychology; social psychology; personality theory. This unit is offered in the Sydney Summer School. Consult the web site:
http://www.usyd.edu.au/summerschool/
for more information.

Textbooks

Psychology 1001 Handbook,
Gray, P. (2002). Psychology (4th Edition). New York: Worth Publishers.
Burton, L.J. (2002). An Interactive Approach to Writing Essays and Research Reports in Psychology. Milton, Queensland: John Wiley & Sons.

PSYC 1002 **Psychology 1002**

6 credit points. B A, B Agr Ec, B E, B Ec (Soc Sc), B Ed, B A (Psych), B Ed, B Sc (Psych), B Med Sc, B Sc, B Sc (Molecular Biology & Genetics), B Sc (Nutrition), UG Study Abroad Program, UG Summer/Winter School. **Session:** Semester 2, Summer. **Classes:** 3 lectures & a tutorial of lhr/wk and lhr/wk of additional web-based (self-paced) material related to the tutorial (lhr/wk practical/demonstration). **Assessment:** One 2.5hr exam, one 1000 word essay, multiple tutorial tests, experimental participation.

Psychology 1002 is a further general introduction to the main topics and methods of psychology, and it is the basis for advanced work as well as being of use to those not proceeding with the subject. Psychology 1002 covers the following areas: human development; human mental abilities; learning, motivation and emotion; visual perception; cognitive processes.
This unit is offered in the Sydney Summer School. Consult the web site:
http://www.usyd.edu.au/summerschool/
for more information.

Textbooks

Psychology 1002 Handbook
Gray, P. (2002). Psychology (4th Edition). New York: Worth Publishers.
Burton, L.J. (2002). An Interactive Approach to Writing Essays and Research Reports in Psychology. Milton, Queensland: John Wiley & Sons.

PSYC 2011 **Brain and Behaviour**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B Sc (Psych), B Sc, B Sc (Molecular Biology & Genetics), Grad Dip Psych, UG Study Abroad Program. A/Prof Iain McGregor. **Session:** Semester 1. **Classes:** 3 lee, 1 tut/week. **Prerequisites:** PSYC (1001 and 1002). **Prohibitions:** PSYC2111. **Assessment:** One 2 hr exam, one 1500 word practical report, one 1500 word essay and six fortnightly quizzes.

This unit of study examines a range of phenomena and principles in learning and perception and their relations to underlying neural substrates. The emphasis in learning is on instrumental conditioning and the principle of reinforcement, ranging from applications of this principle to its neural substrates. Also covered are analyses of aversive-based learning, such as punishment and avoidance, and anxiety, together with related neurochemical mechanisms and the effects of various psychopharmacological agents on these processes. A number of perceptual phenomena will be studied (e.g., motion detection, recognition of faces, identification of emotion). A series of practical classes and demonstrations allow students to gain hands-on experience of how some of these principles and phenomena may be studied experimentally.

Textbooks

See school website

PSYC 2012 **Statistics & Research Methods for Psych**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B A (Psych), B Ed, B Sc (Psych), B Sc, B Sc (Molecular Biology & Genetics), Grad Dip Psych, UG Study Abroad Program. Dr Margaret Charles. **Session:** Semester 1. **Classes:** 2 lee, 1 tut / wk + 1 lee, 1 tut /fortnight. **Assumed Knowledge:** Recommended: HSC Mathematics, any level. **Prerequisites:** PSYC (1001 and 1002). **Prohibitions:** PSYC2112. **Assessment:** One 2hr exam; 3 class tests, lOOOw group project, one lhr mid-semester exam.

The aim is to introduce students to fundamental concepts in statistics as applied to psychological research. These include summary descriptive statistics, an introduction to the principles and practice of research design, and the use of inferential statistics. Building upon this framework, the unit of study aims to develop each student's expertise in understanding the rationale for, and application of, a variety of statistical tests to the sorts of data typically obtained in psychological research.

Textbooks

See school website

PSYC 2013 **Cognitive and Social Psychology**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B A (Psych), B Ed, B Sc (Psych), B Sc, B Sc (Molecular Biology & Genetics), Grad Dip Psych, UG Study Abroad Program. Dr Karen Croot. **Session:** Semester 2. **Classes:** 3 lee & 1 tut/wk. **Prerequisites:** PSYC (1001 and 1002). **Prohibitions:** PSYC2113. **Assessment:** One 2hr exam, one 1500-2000 word essay/report, one 1000-1500w written practical exercise.

This unit expands the depth and range of topics introduced in the first year lectures on Cognitive Processes, Developmental Psychology and Social Psychology. Following an introductory lecture, the first section (16 lectures) on Cognitive Processes focuses on current theories of memory, attention and reasoning and discusses the methods and issues involved in investigating these processes in both healthy individuals and people with cognitive dysfunctions. The second section (6 lectures) on Developmental Psychology presents and evaluates evidence about the early influences on children's social and cognitive development. The final section (16 lectures) on Social Psychology continues an examination of social development across the lifespan from adolescence to late adulthood, followed by an examination of salient social constructs such as prejudice, group processes, altruism, affiliation and attraction.

Textbooks

Cognitive: Galotti, KM (2003) Cognitive psychology with Infotrac: In and out of the laboratory. Wadsworth Publishing.
Social: White, FA, Hayes, B & Livesey D (2005) Developmental Psychology: from infancy to adulthood. Sydney: Pearson Education Australia.

PSYC 2014 **Personality and Differential Psychology**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B Sc (Psych), B Sc, B Sc (Molecular Biology & Genetics), Grad Dip Psych, UG Study Abroad Program. Dr Sabina Kleitman. **Session:** Semester 2. **Classes:** 3 lee & 1 tut/wk. **Prerequisites:** PSYC (1001 and 1002). **Prohibitions:** PSYC2114. **Assessment:** One 2hr exam, one 1500w essay, one 1500w report.

PSYC2014 is made up of two components: Theories of Personality and Differential Psychology (Individual Differences). The aim of the Personality component is to introduce students to a number of influential theories of personality. Students will be exposed to some conceptual analysis and expected to examine critically the various theories covered. The aim of the Differential Psychology component is to introduce key topics in the study and assessment of individual differences in various psychological attributes. Students are expected to gain an understanding about the major theories of intelligence, associated research methods, and the traditional areas of group differences.

Textbooks

Theories of Personality component:
Monte, C. F. & Sollod, R. N. (2003). Beneath the Mask: An Introduction to Theories of Personality. Wiley.
Differential Psychology component:
see School website

PSYC 3010 **Advanced Statistics for Psychology**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B A (Psych), B Ed, B Sc (Psych), B Sc, Grad Dip Psych, UG Study Abroad Program. Dr Margaret Charles
Dr Sabina Kleitman. **Session:** Semester 2. **Classes:** 2hr lee, 2hr tut/wk. **Prerequisites:** PSYC (2012 or 2112) plus at least one other Intermediate Psychology Unit of Study from PSYC (2011 or 2111), PSYC (2013 or 2113), PSYC (2014 or 2114). **Prohibitions:** PSYC3201. **Assessment:** 2hr exam, class test, 1500w assignment, practical exercises.

This unit of study expands upon students' knowledge of the general linear model and its applications in the analysis of data from psychological research. The first half of the course is focused on research for which analysis of variance would be appropriate, and develops students' ability to test more focused questions than can be answered by omnibus F tests. Issues that arise in testing contrasts, such as inflation of Type I error, will also be considered. In the second half of the course, students will further their understanding of multivariate techniques, such as multiple regression analysis.

Textbooks

See School web page

PSYC 3011 Learning and Behaviour

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B Sc (Psych), B Sc, Grad Dip Psych, UG Study Abroad Program. Dr Justin Harris. **Session:** Semester 1. **Classes:** 2hr lee, 1 x 2hr tut/wk. **Assumed Knowledge:** PSYC (2012 or 2112). **Prerequisites:** PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114). **Prohibitions:** PSYC3209. **Assessment:** One 2hr exam; 2000w prac report; tutorial assessment.

This unit addresses the fundamental concepts and more important research findings related to contemporary theories of associative learning in animals and humans. It examines the application of such fundamental research to issues such as drug use, food choice, and learned helplessness. It is designed to foster skills in reading primary sources in this area, and provide the opportunity for hands-on experience in carrying out a research project.

Textbooks

TBA

PSYC 3012 **Cognition, Language and Thought**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B Sc (Psych), B Sc, Grad Dip Psych, UG Study Abroad Program. Dr Bruce Burns. **Session:** Semester 1. **Classes:** 2hr lee, 2hr prac/wk. **Assumed Knowledge:** PSYC (2012 or 2112). **Prerequisites:** PSYC (2013 or 2113) and at least one other Intermediate Psychology unit from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2014 or 2114). **Prohibitions:** PSYC3205. **Assessment:** One 2 hr exam, 2000 word prac report, 1000 word prac exercise(s).

This unit extends the theories and methods of investigating memory and attentional processes discussed in PSYC2013 to consider a number of domains of higher cognitive processing. One strand of the course will focus on language processing and consider how children learn language, the processes involved in speech perception and production, language comprehension and reading. The remainder of the course will deal with the cognitive processes involved in reasoning and decision-making. The practical program will expose students to a variety of the research methods used to investigate higher cognitive processes, develop their understanding of how these methods can be used to investigate hypotheses about mental processes and consider applications of cognitive research to real-world problems and issues.

Textbooks

See School website

PSYC 3013 **Perceptual Systems**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B Sc (Psych), B Sc, Grad Dip Psych, UG Study Abroad Program. Dr Colin Clifford
Dr Tatjana Seizova-Cajic. **Session:** Semester 2. **Classes:** 2hr lee, 1 x 2hr tut/wk. **Assumed Knowledge:** PSYC2012. **Prerequisites:** PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114) or ANAT2010. **Prohibitions:** PSYC3210. **Assessment:** One 2 hr exam, 1500w report, tutorial quiz, group presentation.

The unit covers at an advanced level selected topics in perception from the psychophysical, physiological and neuropsychological perspectives. Students are expected to gain an understanding of some of the major theoretical issues motivating current perceptual research, to appreciate the significance of basic perceptual research for understanding normal perceptual functioning, and to be able to evaluate the empirical and conceptual worth of research contributions.

Textbooks

Sekuler, R. & Blake, R. (2002) Perception. McGrawHill.

PSYC 3014 **Behavioural and Cognitive Neuroscience**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B Sc (Psych), B Sc, Grad Dip Psych, UG Study Abroad Program. Dr Ian Johnston
Dr Karen Croot. **Session:** Semester 2. **Classes:** 3hr lee, lhr prac. **Assumed Knowledge:** PSYC (2113 or 2013). **Prerequisites:** (PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114)) OR (ANAT2010 plus PCOL2011). **Prohibitions:** PSYC 3204, PSYC3215. **Assessment:** One 2 hour exam, one major essay/report 2000-2500 words, one 1000-1500 word written practical exercise.

This unit of study will focus on approaches to studying neurosciences incorporating molecular, pre-clinical and clinical models of brain function. These biological models of brain function will be linked with behavioural, affective and cognitive function and dysfunction. The implications of focal cognitive deficits in neurological patients for models of normal cognitive function will also be explored. Specific topics to be covered will be selected from the following areas: psychopharmacology, addiction, molecular neuroscience, sensorimotor integration, and the neural basis of learning and memory, language, visual cognition and praxis. In addition to lectures, a practical component will cover basic neuroanatomy, histology and neuropharmacology, and will introduce students to experimental and case-study approaches to studying neurosciences.

Textbooks

See School website

PSYC 3015 **Intelligence and Human Reasoning**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B A (Psych), B Ed, B Sc (Psych), B Sc, Grad Dip Psych, UG Study Abroad Program. Dr. Damian Birney
Dr. Jens Beckmann. **Session:** Semester 1. **Classes:** 2 lee, 2 tut/wk. **Assumed Knowledge:** PSYC(2012 or 2112). **Prerequisites:** PSYC(2014 or 2114) and PSYC(2013 or 2113). **Assessment:** One x 2 hr exam; one x 1500 Essay; tutorial quizzes.

The aim of this unit of study is to provide an overview of recent studies of human cognitive abilities and intelligence, and to build a critical platform from which both empirical evidence and theoretical propositions can be evaluated. Two broad methodological approaches will be considered, compared, and contrasted, (a) The individual differences approach which serves as the basis of much of contemporary psychological assessment in clinical, educational and organizational settings and (b) the experimental approach to cognitive abilities which use experimental methods to study the information-processing components that underlie intellectual performance (e.g., working-memory theories).

Textbooks

See school website.

PSYC 3016 **Developmental Psychology**

6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B A (Psych), B Ed, B Sc (Psych), B Sc, Grad Dip Psych, UG Study Abroad Program. Pauline Howie. **Session:** Semester 1. **Classes:** 2 lee, 2 tut/wk. **Prerequisites:** PSYC (2013 or 2113) and at least one other Intermediate Psychology unit from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2014 or 2114). **Prohibitions:** PSYC 3206. **Assessment:** One 2hr exam, 2000w report.

This unit examines various theoretical approaches to human development and selected issues within Developmental Psychology. The major issues/controversies in developmental theory are examined in relation to a number of the more influential theoretical approaches. Students are expected to gain an understanding of the main theoretical influences upon current developmental research and to be able to compare and contrast theories of development. The second part of the unit introduces students to a range of issues in selected areas of contemporary Developmental Psychology. Students are expected to gain knowledge of these areas, and to develop a critical approach to the analysis of current research and theoretical issues. They are also expected to apply their knowledge in practical exercises involving observations of children.

Textbooks

White, Hayes & Livesey (2005) Developmental Psychology. Pearson Edn.

PSYC 3017 **Social Psychology**
6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B Sc (Psych), B Sc, Grad Dip Psych, UG Study Abroad Program. Dr Michael Walker. **Session:** Semester 1. **Classes:** 2 lee, 2 tut/wk. **Assumed Knowledge:** PSYC (2012 or 2112). **Prerequisites:** PSYC (2013 or 2113) and at least one other Intermediate Psychology Unit of Study from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2014 or 2114). **Prohibitions:** PSYC3212. **Assessment:** One 2 hr exam, 2500wd research report, tutorial presentation.
PSYC3017 continues the coverage of topics in Social Psychology begun in PSYC1001 and PSYC2013. The unit is divided into topic areas, where the emphasis is on evaluating theories and the relevant evidence. Topics areas include social relationships, antisocial behaviours, applied social psychology (effects of the physical environment on social behaviour; jury decision making), social cognition, leadership, and cross cultural psychology. Tutorials provide first hand experience of research by involving students in a range of research projects on the topics covered in the lectures. The tutorials also provide an opportunity for discussion of issues associated with these topics.
Textbooks
See School website.

PSYC 3018 **Abnormal Psychology**
6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B A (Psych), B Ed, B Sc (Psych), B Sc, Grad Dip Psych, UG Study Abroad Program. Dr Marianna Szabo. **Session:** Semester 2. **Classes:** 2 lee, 2 tut/wk. **Assumed Knowledge:** PSYC2012. **Prerequisites:** PSYC (2014 or 2114) and at least one other Intermediate Psychology unit of study from PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2013 or 2113). **Prohibitions:** PSYC3203. **Assessment:** One 2 hr exam, 2000w essay, tutorial presentation.
This unit of study critically examines core issues in Abnormal Psychology, concerning the description, explanation and treatment of psychological disorders. The unit of study will include topics such as:
(a) Adult abnormal psychology: Anxiety disorders (specific phobias, panic disorder, agoraphobia, OCD); Addictive disorders (drug, alcohol, gambling); Eating disorders (anorexia nervosa, bulimia nervosa); Mood disorders (dysthymia, major depressive disorder, cyclothymia, bipolar disorder); Schizophrenia, Personality disorders.
(b) Child abnormal psychology: Learning disabilities, Mental retardation, Pervasive developmental disorders, Attention Deficit Hyperactivity disorder; Conduct disorder; Anxiety disorders, Depression.
Textbooks
See School website.

PSYC 3019 **Communication and Counselling**
6 credit points. B A, B Agr Ec, B Ec (Soc Sc), B Ed, B A (Psych), B Ed, B Sc (Psych), B Sc, Grad Dip Psych, UG Study Abroad Program. Dr Michael Walker. **Session:** Semester 2. **Classes:** 2 lee, 2 tut/wk. **Assumed Knowledge:** PSYC (2012 or 2112). **Prerequisites:** PSYC2013 and one other Intermediate Psychology unit of study from PSYC (2011 or 2111), PSYC (2012 or 2112) and PSYC (2014 or 2114). **Prohibitions:** PSYC3214. **Assessment:** One 2 hr exam, 2,500w report, quiz.
Communication:
This part of the unit is concerned with understanding how interpersonal communication occurs in a face to face context. The emphasis will be on the structure of language and non-language components that compose the message and the extent to which that message is correctly decoded.
Counselling:
This part of the unit of study aims to provide an introduction to counselling psychology, to critically examine the theoretical foundations of counselling processes and to consider relevant empirical research.
Textbooks
See School website.

Psychology Honours
Prerequisite:- A Major in Psychology with Credit average or better across both the Intermediate and Senior Psychology* Units of Study comprising the 48 credit points of Intermediate and Senior Psychology Units that constitute the minimum required for the major. PSYC (3010 or 3201) must be included in the Senior Units. BPsych students should consult resolutions in chapter 5. School permission required. Due to restricted resources for research supervision, the intake to Psychology 4 Honours will be limited to approximately 55 students and will be determined by academic merit in Intermediate and Senior Psychology.
Assessment: Formal exams in Ethics and Issues in Psychology and in Research Methods; report of empirical research project; theoretical thesis or assessment in three Special Fields modules.
Students are required to:
(a) devise, conduct and report upon an empirical research project (research area dependent on interests and specialities of staff members);
(b) write a theoretical thesis or attend two Special Fields seminars and complete required assessment tasks; and
(c) attend one lecture series in Ethics and Issues in Psychology and two series of lectures in Research Methods.
HPSC3023 Psychology & Psychiatry History & Phil can be counted towards a Psychology Major. Successful completion of this unit of study is essential for students intending to take the Theoretical Thesis option in Psychology Honours.

Virology

Details for Virology units can be found under the Microbiology entry.

4. Talented Student Program

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

Overview

The Talented Student Program is a special program of study intended for students 'of exceptional merit' who are enrolled in degrees administered by the Faculty of Science (BSc, BMedSc, BIT, BCST, BPsych and their specialist streams or combined degrees). It is also available for the science component of the BLibStud. If other Faculties grant permission, TSP options may be taken for science components that are part of other degree programs.

The aim of the program is to offer students of exceptional merit additional challenging material to enable them to maximise their intellectual growth and potential.

A major benefit of participation in the Talented Student Program is that students receive special supervision by academic staff and often engage in studies with small numbers of fellow students, all of whom have particular interest in the subject. In general, the TSP caters for students whose talent is broad-based across science. There are two main aspects of a student's involvement in the TSP. Students can have greater flexibility in their choice of study (beyond that normally allowed by degree rules), and they have a mentor, a member of the academic staff who assists them in choosing from the great range of possibilities.

Participation in the Talented Student Program is recorded separately on the student's academic transcript, as are TSP units of study, so that all potential employers are aware that the student has completed challenging courses of study.

Further information on the operation of the Talented Student Program may be obtained from the Departmental coordinators listed below or from the Undergraduate Adviser, Faculty of Science.

Selection

Entry to the Talented Student Program is by invitation from the Dean. Invitations to participate in the TSP are made each year for that year. The following guidelines apply generally, although Departments may have additional (and more stringent) requirements for entry to the activities they offer in the program:

- to be considered for the program in their first year, students should normally have a UAI (or equivalent) of 99.00 or higher and a result in band 6 in at least one HSC science subject area and/or a mark of 95 or better in HSC Mathematics Extension 2. The Dean may consider slight variations to these requirements where a student has demonstrated exceptional performance in scientific study (eg, at the level of membership of a team which represents Australia in an International Science or Mathematics Olympiad).
- to be considered for entry into the program in their second and third years, students should normally have WAMs of 85 or over and a high distinction grade in an appropriate Science subject area. Intermediate level entry to TSP is available only to students who have been enrolled full-time in units of study totaling at least 48 credit points.

Students who feel that they satisfy these criteria, but who have not received an invitation to participate in the TSP that year, should contact the Dean.

Range of TSP structures

The relevant Faculty Resolutions (eg, Section 1(5) of the BSc degree, Section i(a) of the BLibStud(Adv) degree) authorise the Dean to give approval for students of exceptional merit to enrol in units of study or in combinations of units of study not normally available within the degree.

In very exceptional cases, particularly for students who have excelled in Olympiad programs, application of these Resolutions may permit accelerated progress toward the completion of the BSc degree.

Faculty policy in relation to the Talented Student Program is described in this chapter.
Students will arrange a suitable pattern of study for the year, in consultation with their mentor (who will also consider the entire degree program). For some students, the TSP activities will be in a single discipline, for others there will be separate TSP activities in several disciplines. Still others will choose interdisciplinary activities that relate several fields to one another. Some students choose TSP activities that involve additional work beyond the normal amount for a student in the degree; for others, the TSP activities replace prescribed work, giving a normal total credit point load. Many disciplines have an organised activity for a whole group of TSP students studying that field, such as a weekly seminar or group project. In other disciplines, TSP activity involves participation by each TSP student in a research group of staff and postgraduates. Every student is treated individually; however, there are some common patterns that we describe below.

For many TSP students who are interested in several fields, (especially if they aren't really sure about their eventual direction), a suitable arrangement might be for them to join in separate TSP activities of each discipline.

Students might elect to study a broader range of fields than usual, by studying more than the normal load of 24 credit points per semester.

Another pattern is to accelerate a student who (say through Olympiad participation) has already learnt most of the topics in the usual first-year units in a discipline. Such a student can go directly to second year study in that field and in related fields, when they begin their degree. By studying more than the usual workload each semester, they may be able to complete their Honours degree in less than 4 years full-time.

Some students have particular interests that can best be served by specially planned activities combining different disciplines.

Constraints on TSP structure

When a TSP activity replaces normal activity within a unit of study, the student will enrol in that unit, but the transcript will be annotated to reflect the TSP activity. When a TSP activity differs from the normal workload, the student will be enrolled in specially designated TSP units. The maximum number of credit points from TSP activities that can be credited towards the degree is normally 40 credit points designated as TSP units of study that are not listed in the Faculty handbook. This 40-credit point total covers all three years of study, and perhaps several different disciplines, so it is important to plan carefully to leave enough TSP possibilities in later years.

It is also important that the student meets all the usual degree requirements, involving numbers of credit points at various levels and in a range of disciplines. Each TSP activity is assigned a number of credit points, a level (Junior, Intermediate or Senior) and a Discipline area, so it can contribute to meeting the degree requirements.

The TSP process

At the start of each year, the Dean chooses students to be invited to participate in the TSP. A welcome is held in Orientation week, and at that time, each student who is new to the TSP will meet briefly with the Faculty TSP coordinator, who assigns a mentor for the student. The mentor is usually a departmental TSP coordinator, from a department closest to the student's interest(s). The mentor and the student then plan special activities for the year, covering all fields (this may involve discussions with coordinators from other depart-

ments). A proposal is put to the Dean, who can approve enrolment in special TSP units of study. During the year the student will meet several times with the mentor, to make sure that everything is going well. Whatever TSP activities have been arranged will be carried out by the student with others (staff and possibly students too). Assessment will be through the mentor and the staff involved in the activities. At the end of the semester the mentor will report results.

TSP coordinators

Faculty of Science
Coordinator: A/Prof Anthony Masters

Senior Agricultural Chemistry
Coordinator: Professor Les Copeland
Students may undertake, in addition to normal coursework, a special research project directly supervised by a member of the academic staff.

Anatomy and Histology
Coordinator: Dr Vladimir Balcar

Biochemistry
See Molecular and Microbial Biosciences

Biology
Coordinator: Dr Jan Marc
Students may undertake additional seminars and/or special project work.

Chemistry
Coordinator: Dr Lou Rendina
The Chemistry School offers Junior TSP students a challenging program based on the 'Chemistry 1 (Special Studies Program)'. The program comprises the Junior Chemistry (Advanced) lecture series, special tutorials, and special project-based laboratory exercises. Admission to Chemistry 1 (SSP) is by invitation only, and is limited to 40 students each year.

TSP students in Intermediate Chemistry take the Intermediate Chemistry (Advanced) units of study. The units of study comprise lectures, tutorials and special project-based laboratory exercises that complement the other Intermediate Chemistry units of study. Admission to Intermediate Chemistry (Advanced) units of study is by invitation only, and is limited to 30 students each year. TSP students are automatically eligible.

The Senior Chemistry TSP program consists of either 12 or 24 credit points of Senior Advanced Chemistry in a given semester. There are four groups of units of study. Students enrolling in either 12 or 24 credit points of Senior Chemistry in a semester must select Advanced units from Groups 1 - 3 and must select at least one unit from each of these Groups. Students must also attend an additional seminar series (one hour per week) consisting of group-based investigations of contemporary chemistry problems. At the end of the project, students are examined by means of a take-home assignment and these marks are included as a component of the lab mark for each of the units of study. Admission is by invitation only and is limited to 15 students each year. TSP students are automatically eligible.

Geosciences
Intermediate Geography
Coordinator: A/Prof Phil Hirsch
In lieu of some of the normal coursework students may undertake special project work on an environmental problem. Particular emphasis will be given to the enhancement of student capabilities in the areas of problem identification, problem formulation, data gathering, and analysis and reporting.

Geology and Geophysics
Coordinator: Dr Derek Wyman
Students will be offered extra seminars and/or special project work.

History and Philosophy of Science
Coordinator: Dr Ofer Gal
The Unit will make special arrangements for individual students throughout their studies. Interested students should contact the TSP coordinator as soon as possible. Topics offered include History, Philosophy, and Sociology of Science; Science and Ethics; and Public Communication/Understanding of Science.

Immunology
Coordinator: A/Prof Helen Briscoe
Students may undertake a special research project.

Information Technologies
Coordinator: Dr James Curran
The Department will make special arrangements for individual students throughout their studies. Interested students should contact the TSP coordinator as soon as possible.

Mathematics and Statistics
Coordinators: Dr Daniel Daners
Students admitted to the program have the following options available to them:

- First Year students in the Faculty Talented Student Program are invited to apply for entry to the Mathematics Special Studies Program. In addition to covering standard material, students in the Special Studies Program will participate in their own seminars on specially chosen advanced topics.
- Students in the Faculty Talented Student Program have access to Mathematics units of study in higher years. For example, a First Year student may take selected second or even third year units.
- Second and third year students have access to special projects, which can be inter-disciplinary, according to the interests of the individual student.

Second and third year students are encouraged to tailor their own programs, in consultation with the coordinators.

Medical Science
Coordinator: A/Prof Helen Briscoe

Molecular and Microbial Bioscience
(for Biochemistry, Molecular Biology and Genetics, Molecular Biotechnology and Microbiology)
Coordinator: Dr Andrew Holmes
A special program of study will be developed for individual students enrolled in Intermediate and Senior Biochemistry, Molecular Biology and Genetics, Molecular Biotechnology and Microbiology.

Pathology
Coordinator: Dr Bob Bao

Pharmacology
Coordinator: A/Prof Ian Spence
The Department will make special arrangements for individual students throughout their studies.

Physics
Coordinators: Prof Dick Hunstead and Prof David McKenzie
Junior students may take extra seminars and special project work in addition to, or in lieu of, parts of Physics (Advanced) units of study. Intermediate students may take extra seminars and special project work in addition to, or in lieu of, parts of Intermediate Physics units of study. Senior students may take extra seminars and special research project work in addition to, or in lieu of, parts of Senior Physics units of study.

An excursion to visit research facilities outside Sydney is offered in the mid-semester break in the July semester.

Physiology
Coordinator: Dr Margot Day
Students may undertake, in addition to normal coursework, a special research project.

Psychology
Coordinator: Dr Irina Harris

The program is available in Intermediate and Senior Psychology. Students admitted to the program have the following options available to them:

- additional options in Psychology either in lieu of, or in addition to, other units of study in Science
- a combination of additional Psychology options combined with special studies in another science discipline (eg, Biochemistry, Computer Science, Mathematics and Statistics)
- a special research project in lieu of, or in addition to, normal practical or class work components
- various combinations of the above options.

Senior Soil Science

Coordinator: Dr Balwant Singh

Students may undertake, in addition to normal coursework, a special research project.

5. Undergraduate degree regulations

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

This chapter contains the regulations governing undergraduate degrees throughout the University and the regulations governing undergraduate degrees offered by the Faculty of Science. These are arranged in the following order:

1. Bachelor of Science - BSc
The Bachelor of Science includes the specially designated streams:
- Bachelor of Science (Advanced) - BSc (Advanced)
- Bachelor of Science (Advanced Mathematics) - BSc (Advanced Mathematics)
- Bachelor of Science (Bioinformatics) - BSc (Bioinformatics)
- Bachelor of Science (Environmental) - BSc (Environmental)
- Bachelor of Science (Marine Science) - BSc (Marine Science)
- Bachelor of Science (Molecular Biology and Genetics) - BSc (Molecular Biology and Genetics)
- Bachelor of Science (Molecular Biotechnology) - BSc (Molecular Biotechnology)
- Bachelor of Science (Nutrition) - BSc (Nutrition)

The Bachelor of Science is offered in the following designated combined degree courses:
- Bachelor of Science/Bachelor of Laws - BSc/LLB
- Bachelor of Science/Bachelor of Arts - BSc/BA
- Bachelor of Science/Bachelor of Commerce - BSc/BCom
- Bachelor of Science/Bachelor of Engineering - BSc/BE
- Bachelor of Engineering/Bachelor of Science - BE/BSc
- Bachelor of Education (Secondary: Science)/Bachelor of Science - BEd (Secondary: Science)/BSc
- Bachelor of Education (Secondary: Mathematics)/Bachelor of Science - BEd (Secondary: Mathematics)/BSc
- Bachelor of Education (Secondary: Science)/Bachelor of Science (Psychology) - BEd (Secondary: Science)/BSc
- Bachelor of Nursing/Bachelor of Science - BN/BSc
- Bachelor of Applied Science (Exercise and Sport Science)^ achelor of Science (Nutrition) - BApplSc(ExSS)/BSc(Nutrition)
- Bachelor of Science (Advanced)/Bachelor of Medicine and Bachelor of Surgery - BSc (Advanced)/MBBS

2. Bachelor of Computer Science and Technology - BCST
The Bachelor of Computer Science and Technology includes the specially designated stream:
- Bachelor of Computer Science and Technology (Advanced) - BCST (Advanced)

3. Bachelor of Information Technology - BIT

4. Bachelor of Medical Science - BMedSc
The Bachelor of Medical Science is offered in the following designated combined degree courses:
- Bachelor of Engineering/Bachelor of Medical Science - BE/BMedSc
- Bachelor of Medical Science/Bachelor of Medicine and Bachelor of Surgery - BMedSc/MBBS

5. *Bachelor of Psychology - BPsych*

6. Bachelor of Science in Media and Communications - BScMediaCommun

7. *Bachelor of Science and Technology - BST*

8. The degrees in the Faculty of Science offered in conjunction with other faculties shall be:
- (a) Bachelor of Liberal Studies (BLibStud)
- (b) Bachelor of Liberal Studies (International) (BLibStud(International)
- (c) Bachelor of Liberal Studies (Advanced) (BLibStud(Advanced))
- (d) Bachelor of Arts and Sciences (BAS)

Note the specific glossaries attached to each degree, and the generic glossary common to all degrees, last in the chapter.
The regulations governing postgraduate award courses can be found in chapter 7.

University of Sydney (Coursework) Rule 2000

See the University of Sydney (Coursework) Rule 2000 (as amended) (chapter 10).

Bachelor of Science

Resolutions of the Senate

Bachelor of Science

1. These Resolutions of the Senate relate to the degree of Bachelor of Science including its streams:
- (a) Bachelor of Science;
- (b) Bachelor of Science (Advanced);
- (c) Bachelor of Science (Advanced Mathematics);
- (d) Bachelor of Science (Bioinformatics);
- (e) Bachelor of Science (Environmental);
- (f) Bachelor of Science (Marine Science);
- (g) Bachelor of Science (Molecular Biology and Genetics);
- (h) Bachelor of Science (Molecular Biotechnology);
- (i) Bachelor of Science (Nutrition); and the Combined degree courses:
- (j) Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)]/Bachelor of Laws;
- (k) Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)]/Bachelor of Arts;
- (1) Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)]/Bachelor of Commerce;
- (m) Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)]/Bachelor of Engineering;
- (n) Bachelor of Engineering /Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)];
- (o) Bachelor of Education (Secondary: Science) /Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)];
- (p) Bachelor of Education (Secondary: Mathematics) / Bachelor of Science [or BSc(Advanced) or BSc(Advanced Mathematics)];
- (q) Bachelor of Education (Secondary: Science) /Bachelor of Science (Psychology); and
- (r) Bachelor of Nursing/Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)]
- (s) Bachelor of Applied Science (Exercise and Sport Science) /Bachelor of Science (Nutrition).

These Resolutions must be read in conjunction with the University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate courses, and the relevant Faculty Resolutions.

Requirements for the pass degree
2. To qualify for the award of the pass degree students must:
- (1) complete successfully units of study giving credit for a total of 144 credit points; and
- (2) satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Requirements for the honours degree
3. To qualify for the award of the honours degree students must complete the honours requirements published in the faculty resolutions relating to the course.

Requirements for the combined degrees
4. To qualify for the award of the two degrees in a combined degree course students must complete the requirements published in these and the other relevant faculty resolutions relating to the course.

Resolutions of the Faculty

These resolutions must be read in conjunction with the University of Sydney (Coursework) Rule and the Glossary appended to these Faculty Resolutions.

Section 1

Streams
1. The Bachelor of Science degree comprises the following streams:
(a) Bachelor of Science;
(b) Bachelor of Science (Advanced);
(c) Bachelor of Science (Advanced Mathematics);
(d) Bachelor of Science (Bioinformatics);
(e) Bachelor of Science (Environmental);
(f) Bachelor of Science (Marine Science);
(g) Bachelor of Science (Molecular Biology and Genetics);
(h) Bachelor of Science (Molecular Biotechnology); and
(i) Bachelor of Science (Nutrition).

2. A student for the BSc degree in any stream may apply to the Dean for permission to transfer candidature to any other stream.

3. The testamur for the Bachelor of Science shall specify the stream for which it is awarded.

Units of study
4. The units of study, which may be taken for the degree, are set out under Subject areas in Table I and Table VI together with:
(1) designation as Junior, Intermediate, Senior or Honours and, where appropriate, as Advanced units of study;
(2) credit point values;
(3) assumed knowledge, corequisites/prerequisites;
(4) the semesters in which they are offered; and
(5) the units of study with which they are mutually exclusive.

5. The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table I.

6. A student who enrols, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Science, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

Requirements for the pass degree
7. To qualify for the award of the degree a student shall complete units of study having a total value of at least 144 credit points, including:
(1) at least 96 credit points from Science subject areas;
(2) at least one major from those included in Table I;
(3) at least 12 credit points from the Science subject areas of Mathematics and Statistics;
(4) at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics; and
(5) no more than 60 credit points from Junior units of study.

8. A major in the BSc normally requires the completion of a minimum of 24 credit points of Senior units of study in one Science area, including any units of study specified in the Table of undergraduate units of study as compulsory for that major. (A major in Psychology requires 48 credit points across Intermediate and Senior Psychology* units of study including PSYC (2111 or 2011), PSYC (2112 or 2012), PSYC (2113 or 2013) and PSYC (2114 or 2014). No other Intermediate Psychology units can be counted towards the major). The senior units must include at least one of PSYC 3011, 3012, 3013 and 3014.
**Note HPSC 3023 Psychology & Psychiatry History & Phil is available for Senior Psychology students and will count towards a major in Psychology. Successful completion of this unit of study is essential for students intending to take the Theoretical Thesis option in Psychology Honours).*

9. A maximum of 48 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculty of Science.

10. Units of study completed at the University of Sydney Summer School which correspond to units of study specified in Section 7 and Section 9 may be credited towards the course requirements.

11. The testamur for the degree of Bachelor of Science shall specify the major(s) completed in order to qualify for the award.

Honours courses
12. There shall be honours courses in all Science subject areas listed in Table VI (Honours units of study).

13. To qualify to enrol in an honours course, students shall:
(1)
(a) have qualified for the award of a pass degree; or
(b) be a pass graduate of the Faculty of Science; or
(c) be a pass graduate holding a Bachelor of Science degree or an equivalent qualification from another institution;
(2) have completed a minimum of 24 credit points of Senior units of study relating to the intended honours course (or equivalent at another institution);
(3) have achieved either:
(a) a credit average in the relevant Senior Science units of study; or
(b) a SCIWAM of at least 60 (or equivalent at another institution); and
(4) satisfy any additional criteria set by the Head of Department concerned.

14. Students shall complete the requirements for the honours course full-time over two consecutive semesters.

15. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

16. To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in the Table of undergraduate units of study, as prescribed by the Head of Department concerned.

17. The grade of honours and the honours mark are determined by performance in the honours course.

18. A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.

19. A student may not re-attempt an honours course in a single subject area.

20. A student who is qualified to enrol in two honours courses may either:
(1) complete the honours courses in the two subject areas separately and in succession; or
(2) complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.

Designated streams
BSc (Advanced)
21. To qualify for the award of the pass degree in the BSc (Advanced) stream, a student shall complete the requirements for the BSc degree in Section 7 with the exception of 7(5) and in addition, except with the permission of the Dean:

(1) include no more than 48 credit points from Junior units of study;
(2) include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units;
(3) include at least 48 credit points of Senior units of study of which at least 24 are completed at the Advanced level or as TSP units in a single Science subject area; and
(4) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment;
(5) candidates who fail to maintain the required credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Advanced) candidates. Candidates who fail to achieve a credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

22. Students who have completed at least 48 credit points may be permitted to transfer to the BSc (Advanced) stream from the BSc or other degree programs if:
(1) their mark averaged over all attempted units of study is 75 or greater; and
(2) they are able to enrol in the required number of Advanced level units or TSP units.

23. The testamur for the degree of Bachelor of Science (Advanced) shall specify the major(s) completed in order to qualify for the award.

BSc (Advanced Mathematics)
24. To qualify for the award of the pass degree in the BSc (Advanced Mathematics) stream, a student shall complete the requirements for the BSc degree in Section 7 except 7(5) and in addition, except with the permission of the Dean:
(1) include no more than 48 credit points from Junior units of study;
(2) include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics;
(3) include at least 48 credit points of Senior units of study of which at least 24 are completed at the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics; and
(4) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment;
(5) candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Advanced Mathematics) candidates. Candidates who fail to achieve a Credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

25. Students who have completed at least 48 credit points may be permitted to transfer to the BSc (Advanced Mathematics) stream from other degree programs if:
(1) their mark averaged over all attempted units of study is 75 or greater; and
(2) they are able to enrol in the required number of Advanced level units or TSP units.

Other streams
26.
(1) In order to qualify for the award of the pass degree in the following streams, a student shall, except with the permission of the Dean, complete the requirements for the BSc degree in Section 7 with the exception of 7(2) and complete the units of study set out in the respective Tables of undergraduate units of study:
(a) Bioinformatics Table IA;
(b) Environmental Table IB;
(c) Marine Science Table IC;
(d) Molecular Biology & Genetics Table ID;
(e) Molecular Biotechnology Table IE; or
(2) In order to qualify for the award of honours degree in the Nutrition stream, a student shall, except with the permission of the Dean, complete the requirements for the BSc degree in Sections 7 and 16 and complete the units of study set out in Table IF.

Combined degrees

Science/Law: Faculty Resolutions

27. A student may proceed concurrently to the degrees of Bachelor of Laws and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics).

28. To qualify for the award of the pass degree in the BSc degree a student shall complete 96 credit points from Science units of study set out in Table I and 48 credit points from Law units of study set out in Table II, including:
(1) at least 12 credit points from the Science subject areas of Mathematics and Statistics;
(2) 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
(3) 60 credit points of Intermediate/Senior units of study in Science subject areas; and
(4) a major in a Science area.

29. To qualify for the award of the pass degree in an Advanced stream of the BSc degree, a student shall complete the requirements for the BSc degree in Section 28 and in addition, except with the permission of the Dean:
(1) include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units;
(2) include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area;
(3) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment;
(4) candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed in the Advanced stream. Candidates who fail to achieve a Credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

30. Except with the permission of the Dean of Law, a student may not enrol in any of the Intermediate or Senior units of study in Table II until the units of study LAWS 1006 Legal Institutions LAWS 1010 Torts are completed.

31. Students who qualify to undertake honours in the BSc degree may elect to do so either:
(1) by suspending candidature from the Bachelor of Laws degree (including the combined Science/Law courses) for one year, with the permission of the Faculty of Law; or
(2) after completion of the combined course.

32. Students may abandon the combined degree course and elect to complete either a BSc or LLB in accordance with the resolutions governing those degrees.

33. Students will be under the general supervision of the Faculty of Science until the end of the semester in which they complete the requirements for the BSc. After that they will be under the general supervision of the Faculty of Law.

34. The Deans of the Faculties of Law and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in these resolutions.

Science/Commerce: Joint Resolutions

Note that from 2006, commencing students admitted to the Bachelor of Commerce/Bachelor of Science combined course shall be under the general supervision of the Faculty of Economics and Business for all combined award course matters such as policies and enrolment.

35. A student may proceed concurrently to the degrees of Bachelor of Commerce and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics).

36. To qualify for the award of the pass degree a student must complete successfully units of study amounting to a total of 240 credit points, comprising:

(1) in the first six semesters of enrolment, 144 credit points at a grade of pass or better including:
  (a) 12 credit points of units of study from the Science subject areas of Mathematics and Statistics listed in Table I (BSc);
  (b) 24 credit points of Junior units of study from at least two Science subject areas, but not including Mathematics or Statistics;
  (c) a minimum of 60 credit points from Intermediate and Senior Science subject areas including a major, as specified in the Faculty of Science resolutions for the Bachelor of Science degree;
  (d) 6 credit points consisting of ECMT 1010 Business and Economics Statistics A, except that a student shall complete an alternative Junior unit of study from the Faculty of Economics and Business other than those in 36(l)(e), (f) and (g) if MATH 1015, MATH 1005 or MATH 1905 is completed in order to satisfy 36(1)(a);
  (e) 6 credit points consisting of INFS 1000 Foundations of Business Systems;
  (f) 12 credit points in Junior units of study from Accounting; and
  (g) 12 credit points in Junior units of study from Economics.

(2) in the last four semesters of enrolment 96 credit points at a grade of pass or better, comprising: either an award course major (minimum of 32 credit points) or an award course double major (minimum of 48 credit points), comprising Senior units of study as specified in the faculty of Economics and Business Handbook, from the following subject areas:
  Accounting;
  Business Information Systems;
  Commercial Law;
  Economics;
  Finance;
  Industrial Relations and Human Resource Management;
  International Business;
  Marketing;
  Management; or
  Management Decision Sciences.

(3) during the course of the program:
  (a) at least 96 credit points in units of study taught by the Faculty of Economics and Business;
  (b) no more than 48 credit points of Junior units of study taught by the Faculty of Economics and Business; and
  (c) no more than 100 credit points of Junior units of study.

37. To qualify for the award of the pass degree in an Advanced stream of the BSc degree, a student shall complete the requirements for the BSc degree in Section 36 and in addition, except with the permission of the Dean:

(1) include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units;
(2) include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area;
(3) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment;
(4) candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed in the Advanced stream. Candidates who fail to achieve a Credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

38. Students who are qualified to do so may undertake honours courses in either or both degrees or a joint honours course on completion of the combined degree.

(1) There shall be honours courses in all Science subject areas listed in Table VI (Honours units of study) in the Faculty of Science resolutions for the Bachelor of Science degree.
(2) The Bachelor of Commerce may be awarded either with Honours in one of the subject areas listed below or, as approved by the Faculty of Economics and Business, with joint Honours in two of the subject areas listed below:
  Accounting;
  Business Information Systems;
  Commercial Law;
  Econometrics;
  Economics;
  Finance;
  Government and International Relations;
  Industrial Relations and Human Resource Management;
  International Business;
  Management Decision Sciences;
  Marketing;
  Political Economy; or
  any area offered by another faculty of the University, as approved by the Faculty of Economics and Business.
(3) To qualify for the Bachelor of Commerce with Honours, a student must complete successfully an additional year of study (the honours year), as specified in the faculty of Economics and Business Handbook.
(4) To enrol in the Commerce honours year, a student must satisfy the following:
  (a) successful completion of the requirements for the combined pass award course;
  (b) confirmation of the student's eligibility for entry to the honours year from the relevant Discipline(s)/Department; and
  (c) any other requirements for entry into the honours year set by the relevant Discipline(s)/Department and the Faculty of Economics and Business, unless otherwise approved by the Faculty of Economics and Business.

39. Students may abandon the combined degree course and elect to complete either a BSc or a BCom in accordance with the resolutions governing those degrees.

40. Students will be under the general supervision of the Faculty of Science for all combined award course matters such as policies and enrolment.

41. The Deans of the Faculties of Economics and Business and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in these resolutions.

Science/Arts: Joint Resolutions

42.

(1) To qualify for the award of the pass degrees a student shall complete from the Table of undergraduate units of study for the Bachelor of Science and from the Table of units of study for the Bachelor of Arts, units of study having a total value of 240 credit points, including:
  (a) no more than 96 credit points from Junior units of study, with no more than 18 Junior credit points from the same Arts subject area;
  (b) at least 96 credit points from Science subject areas, including:
    (i) at least 12 credit points from the Science subject area of Mathematics & Statistics;
    (ii) at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics & Statistics;
    (iii) a major in a Science area as defined in Table I for the Bachelor of Science, normally requiring the completion of 24 credit points of Senior units of study in one Science area, including any units of study specified in the table as compulsory for that major;
  (c) at least 72 credit points of Senior units of study in Arts subject areas from Part A including:
    (i) a Part A major consisting of 36 Senior credit points in a single subject area listed in Part A of the table of units of study for the Bachelor of Arts or of at least 18 Senior credit points from a Part A subject area combined with no more than 18 Senior credit points from units of study approved by the Dean of Arts for cross-listing with the major, except in the case of Medieval Studies, Film

Studies, European Studies and Asian Studies where the entire major may be cross-listed, and in such other subject areas as may be approved by the Dean of Arts;

(ii) no more than 64 Senior credit points from the same Arts subject area.

(2) A student may not count a unit of study toward more than one major.

(3) Units of study completed at the University of Sydney Summer School which correspond to units of study specified in Section 7 and Section 9 may be credited towards the course requirements.

(4) The testamurs for the degrees of Bachelor of Science and Bachelor of Arts shall specify the major(s) completed in order to qualify for the awards.

Specially designated streams

43.

(1) A student may proceed concurrently to the degrees of Bachelor of Science and Bachelor of Arts, Bachelor of Science (Advanced) and Bachelor of Arts or Bachelor of Science (Advanced Mathematics) and Bachelor of Arts.

BSc(Advanced)

(2) To qualify for the award of the pass degree in the Advanced stream of the BSc degree, a student shall complete the requirements for the BSc degree in Section 4 and in addition, except with the permission of the Dean:

(a) include at least 12 credit points of Intermediate Science units of study at either the Advanced level or as TSP units;

(b) include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area; and

(c) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

(3) Candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed in the Advanced stream. Candidates who fail to achieve a Credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

(4) Students who have completed at least 48 credit points may be permitted to transfer to the BSc (Advanced) stream from the BSc or BSc (Advanced Mathematics) if:

(a) their mark averaged over all attempted units of study is 75 or greater; and

(b) they are able to enrol in the required number of Advanced level units or TSP units.

(5) The testamur for the degree of Bachelor of Science (Advanced) shall specify the major(s) completed in order to qualify for the award.

BSc (Advanced Mathematics)

(6) To qualify for the award of the pass degree in the Advanced Mathematics stream of the BSc degree, a student shall complete the requirements for the BSc degree in Section 4 and in addition, except with the permission of the Dean:

(a) include no more than 48 credit points from Junior Science units of study;

(b) include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics;

(c) include at least 48 credit points of Senior units of study of which at least 24 are completed at the Advanced level or as TSP units in the Science subject areas of Mathematics and Statistics; and

(d) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

(7) Candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Advanced Mathematics) candidates. Candidates who fail to achieve a Credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

(8) Students who have completed at least 48 credit points may be permitted to transfer to the BSc (Advanced Mathematics) stream from the BSc or BSc(Advanced) if:

(a) their mark averaged over all attempted units of study is 75 or greater; and

(b) they are able to enrol in the required number of Advanced level units or TSP units.

Honours in Science and Arts

44. Students who are qualified to do so may undertake honours courses in either or both degrees or a joint honours course at the completion of the combined degrees.

Science Honours

45. There shall be honours courses in the following subject areas:

Agricultural Chemistry
Anatomy and Histology
Biochemistry
Biology
Cell Pathology
Chemistry
Computational Science
Computer Science
Environmental Studies
Geography
Geology & Geophysics
History and Philosophy of Science
Immunology
Information Systems
Marine Science
Applied Mathematics
Pure Mathematics
Microbiology
Molecular Biotechnology
Nutrition and Dietetics
Nutrition
Pharmacology
Physics
Physiology
Plant Science
Psychology
Soil Science
Mathematical Statistics

46. To qualify to enrol in an honours course, students shall:

(1) have qualified for the award of a pass degree;

(2) have completed a minimum of 24 credit points of Senior units of study relating to the intended honours course;

(3) have achieved either:

(a) a credit average in the relevant Senior Science units of study; or

(b) a SCIWAM of at least 60; and

(4) satisfy any additional criteria set by the Head of Department concerned.

47. Students shall complete the requirements for the honours course full-time over two consecutive semesters.

48. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

49. To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in the Table of undergraduate units of study, as prescribed by the Head of Department concerned.

50. The grade of honours and the honours mark are determined by performance in the honours course.

51. A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean of Science, receive a bronze medal.

52. A student may not re-attempt an honours course in a single subject area.

53. A student who is qualified to enrol in two honours courses may either:
(a) complete the honours courses in the two subject areas separately and in succession; or
(b) complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean of Science.

Arts Honours

54. There shall be honours courses in the following subject areas:
Ancient History
Social Anthropology
Archaeology (Classical)
Archaeology (Near Eastern)
Archaeology (Prehistoric and Historical)
Art History and Theory
Australian Literature
Chinese Studies
Classics
Economics
Education
English
French Studies
Gender Studies
Germanic Studies
Government and International Relations
Greek (Ancient)
Hebrew (Classical)
History
Indonesian and Malay Studies (no guarantee of continuing availability of units)
Industrial Relations and Human Resource Management
Italian Studies
Japanese Studies
Jewish Civilisation, Thought and Culture
Korean Studies
Latin
Linguistics
Medieval Studies
Modern Greek Studies
Music
Performance Studies
Philosophy
Political Economy
Sanskrit
Sociology
Studies in Religion

55. To qualify to enrol in an honours course, students shall:
(1) have qualified for the award of the pass degree; and
(2) (a) have completed at least 48 senior credit points in the subject area concerned, completed at an average of credit level, or
(b) have completed the requirements of the Faculties of Economics and Business, and Education and Social Work, for subject areas listed in Part B of the table of units of study for the BA, as appropriate; and
(3) have met any other entry requirements as specified in the table of units of study for the BA, except that the entry requirement must not exceed 64 senior credit points in the subject area concerned; and
(4) have the written approval of the Chair of department concerned.

56. A student who is qualified to enrol in two honours courses may either:
(1) complete the honours courses in the two subject areas separately and in succession, or
(2) complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean of Arts.

57. Candidature is normally full-time. Full-time students must complete the requirements over two consecutive semesters.

58.A student may seek permission from the Dean of Arts to undertake the honours course on a part-time basis. Part-time candidature must not exceed four consecutive semesters.

59. A student may seek written permission from the Dean of Arts to suspend candidature.

60. Suspension may be granted for a maximum period of one semester.

61. In the case of a student being granted suspension the student must not exceed five consecutive semesters, including the semester of suspension.

62. Students resuming the honours course after a period of suspension must advise the Faculty of Arts office in writing of their intention to re-enrol.

63. A student may not:
(1) enrol in any fourth year unit of study without first qualifying for the award of the pass degree,
(2) be awarded the pass degree while enrolled in final year honours, or
(3) enrol concurrently in a fourth year unit of study and any other course or unit of study,
(4) enrol in more than two fourth year units per semester.

64. Candidates for combined degrees are required to transfer to the single Bachelor of Arts candidature when enrolled in fourth year units of study.

65. To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study, comprising four, 12 credit point semester length units of study.

66. The grade of honours and the honours mark are determined by performance in the honours course.

67. The award of honours degrees, the level at which they are awarded and the award of the University Medal shall be determined by the Dean of Arts on the advice of the Faculty Honours Committee.

68. A student with an honours mark of 90 and a meritorious record in previous studies may be considered by the Dean of Arts on the advice of the Faculty Honours Committee for the award of the University Medal.

69. The testamur for the honours course shall specify the subject area or areas and the grade of honours, and the medal if awarded. It shall not include majors.

70. Students who fail or discontinue - fail final year honours may not re-enrol in it.

Units of study

71.
(1) The units of study which may be taken for the degrees of Bachelor of Science and Bachelor of Arts are set out under subject areas in Tables I and VI for the Bachelor of Science and Table Part A and Part B for the Bachelor of Arts together with:
(a) designation as Junior, Intermediate (in the case of Science units), Senior or Honours, and where appropriate as Advanced, units of study
(b) credit point values
(c) corequisites/prerequisites/assumed learning/assumed knowledge
(d) the semesters in which they are offered
(e) the units of study with which they are mutually exclusive
(f) units of study in Part A of the table of units available to BA students cannot be cross-listed to majors in Part B of the table of units of study available to BA students
(g) the faculty responsible for the unit of study; and
(h) any special conditions.
(2) The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table I.

(3) Units of study completed at the University of Sydney Summer/Winter School which correspond to units of study in the table of units of study for the Bachelor of Arts may be credited towards the course requirements.

Enrolment in more/less than minimum load

72

(1) A student may not enrol without first obtaining permission from the Dean in additional units of study once the combined degree requirements of 240 credit points have been satisfied.

(2) Students may enrol on either a full-time or part-time basis.

Cross-institutional enrolment

73. 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:

(1) the unit of study content is material not taught in any corresponding unit of study in the University; or

(2) the student is unable for good reason to attend a corresponding unit of study at the University.

Restrictions on enrolment

74. Units of study in subject areas in the Faculty of Arts which are restricted to a specific degree are as follows:

Bachelor of Arts Informatics

- units of study with the prefix ARIN except ARIN 2100 Web Tools available to Bachelor of Arts with departmental permission and ARIN 3000 Technocultures available to Bachelor of Arts

Bachelor of Arts (Media and Communications)

- units of study with the prefix MECO

Bachelor of Social Sciences

- units of study with the prefix SSCI

Bachelor of Arts (Honours), Bachelor of Arts (Asian Studies) (Honours), Bachelor of Arts (Languages) (Honours), Bachelor of Arts (Media and Communications) (Honours), Bachelor of Informatics (Honours), Bachelor of Social Sciences (Honours) Bachelor of Arts and Sciences (Honours)

- all Fourth Year Honours units (4000 units)

Bachelor of Arts/Bachelor of Laws

- units of study with the prefix LAWS

Bachelor of Arts and Sciences degree

- units of study with the prefix SLSS

75. A student may not enrol in a language based unit of study, if, in the opinion of the Chair of the department involved, on the advice of the teacher of the unit, the student's linguistic knowledge or competence would unfairly advantage them over other students in the unit. If enrolment has already taken place, the Dean may direct that the student be withdrawn without penalty from the unit.

76.

(1) A candidate may not count a particular unit of study more than once towards the degrees or count two units of study which overlap substantially in content.

(2) Units of study which overlap substantially in content are noted in the Tables of Undergraduate units of study. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the combined course requirements.

77. A candidate may not enrol in units of study having a total value of more than 30 credit points in a semester.

Time limits

78. A candidate must complete all the requirements for the award of the degrees within ten calendar years of admission to candidature or readmission without credit. If a candidate is readmitted with credit, the Faculty will determine a reduced time limit for completion of the degrees.

Repeating a unit of study

79. Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of pass or better, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.

80. A student may not enrol in a unit of study which they have completed previously with a grade of pass or better.

Discontinuation of enrolment

81.

(1) Students may abandon the combined degree course and elect to complete either a Bachelor of Science or a Bachelor of Arts in accordance with the resolutions governing these degrees.

(2) A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course. Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

Suspension of candidature

82. A student may seek written permission from the Dean to suspend candidature in the combined course. Suspension may be granted for a maximum period of one year on any one application.

Re-enrolment after an absence

83. A student who intends to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First semester of the following year or the end of May for Second semester of the same year.

Satisfactory progress

84. If a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Assessment policy

85. Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

86. Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).

87. Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

Credit Transfer Policy

88. Credit will not be granted for units of study completed more than ten years prior to application, except with the permission of the Dean.

89. Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in Table I or as non-specific credit.

90. The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units of study from other degrees for which credit is maintained or a degree has been conferred.

91. All students, notwithstanding any credit transfer, must complete at least 24 credit points of Senior Science units of study towards a major taken at the University of Sydney.

Candidates enrolled before 2006

92.

(1) These Resolutions apply to all candidates for the degrees enrolling in units of study after 1 January 2006.

(2) With the permission of the Faculty of Science, candidates who first enrolled for the degrees prior to 2006 and have not had a period of suspension or exclusion may until 31 March 2009 choose to qualify for the degrees under the old resolutions.

(3) With the permission of the Faculty of Science, candidates who first enrolled for the degrees as part-time candidates prior

to 2006 and have not had a period of suspension or exclusion may until 31 March 2011 choose to qualify for the degrees under the old resolutions.

Science/Engineering: Joint Resolutions

BE/BSc combined degrees

93. A student may proceed concurrently to the degrees of Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics) and Bachelor of Engineering.

94. To qualify for the award of the pass degrees a student shall complete units of study having a total value of at least 240 credit points including:
(1) 96 credit points of units from Science subject areas,
(2) a major in a Science area, and
(3) units of study as prescribed in the Tables of BE Specialisation Requirements for the specialisation that the student is pursuing (refer to Engineering Handbook).

95. To qualify for the award of the pass degree in the Advanced or Advanced Mathematics stream of the BSc a student shall, in addition to the requirements of resolution 94:
(1) include at least 54 credit points of Intermediate/Senior Science units of study of which at least 36 shall be completed at the Advanced level or as TSP units;
(2) include at least 24 credit points of Senior Science units of study at the Advanced level or as TSP units in a single Science subject area; and
(3) maintain in Intermediate and Senior Science units of study an average mark of 65 or greater in each year of enrolment.

96. Students who are so qualified may be awarded honours in the BE degree or undertake an honours course in the BSc degree.

97. Students may abandon the combined degree course and elect to complete either a BSc or a BE in accordance with the resolutions governing those degrees.

98. Students will be under the general supervision of the Faculty of Engineering.

99. The Deans of the Faculties of Engineering and Science shall jointly exercise authority in any matter concerning the combined degrees not otherwise dealt with in these resolutions.

BSc/BE double degrees

100. A student enrolled for a Bachelor of Engineering degree may be permitted to transfer to the Faculty of Science to complete a BSc degree at the end of Second Year or Third Year in the BE degree if:
(1) all units of study attempted in the BE degree have been completed with a grade of Pass or better;
(2) at least 96 credit points from units of study in the BE degree have been completed;
(3) the student is qualified to enrol in a major in a Science area; and
(4) for admission to the Advanced streams, the student satisfies the requirements in Section 21 or 24.

101. To qualify for the award of the pass BSc degree a student shall complete units of study to a value of at least 48 credit points including:
(1) 42 credit points of Intermediate/Senior units of study in Science subject areas; and
(2) a major in a Science area.

102. To qualify for the award of the pass degree in the Advanced or Advanced Mathematics stream of the BSc a student shall in addition to the requirements of Sections 100 and 101:
(1) include at least 72 credit points of Intermediate/Senior Science units of study;
(2) include at least 24 credit points of Senior Science units of study at the Advanced level or as TSP units in a single Science subject area; and
(3) maintain in Intermediate and Senior Science units of study an average mark of 65 or greater in each year of enrolment.

103. The requirements of Sections 101 or 102 must be completed in one year of full-time study or two years of part-time study.

104. Students who complete at least 42 but less than 48 credit points in the prescribed time limits may in the following year of enrolment in the BE complete the remaining units to satisfy the requirements of the Faculty of Science. Students who complete less than 42 credit points may apply to be readmitted to the degree, subject to sections 142-146.

105. Students who are so qualified may undertake an honours course in the BSc in accordance with Sections 12-20.

106. The Deans of the Faculties of Engineering and Science shall jointly exercise authority in any matter concerning the double degree program not otherwise dealt with in these resolutions.

Science/Education: Joint Resolutions

107. A student may proceed concurrently to the degrees of Bachelor of Education and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics).

108. To qualify for the award of the pass degree in an Advanced stream of the BSc degree, a student shall complete the requirements for the BSc degree in Section 113 or 114 and in addition, except with the permission of the Dean:
(1) include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units;
(2) include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area;
(3) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment;
(4) candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed in the Advanced stream. Candidates who fail to achieve a Credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

109. Students who are qualified to do so may undertake honours courses in either or both degrees or a joint honours course at the completion of the combined degrees.

110. Students may abandon the combined degree course and elect to complete either a BSc or a BEd in accordance with the resolutions governing those degrees.

111. Supervision of all students in the combined degrees will be the responsibility of the Faculty of Education.

112. The Deans of the Faculties of Education and Science shall jointly exercise authority in any matter concerning the combined degrees not otherwise dealt with in these resolutions.

BEd(Secondary:Science)/BSc combined degrees

113. To qualify for the award of the pass degrees a student shall complete, over ten semesters, having a total value of at least 240 credit points including:
(1) at least 96 credit points from Science subject areas and 132 credit points from prescribed Education units of study;
(2) at least 12 credit points from the Science subject areas of Mathematics and Statistics;
(3) at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics;
(4) a major in a Science subject area;
(5) a major in Education;
(6) at least 84 credit points of units of study in Curriculum and Professional Studies in Secondary Education; and
(7) no more than 100 credit points from Junior units of study.

BEd(Secondary:Mathematics)/BSc combined degrees

114. To qualify for the award of the pass degrees a student shall complete, over ten semesters, units of study having a total value of at least 240 credit points including:
(1) at least 96 credit points from Science subject areas and 132 credit points from prescribed Education units of study;
(2) at least 12 credit points from the Science subject areas of Mathematics and Statistics;
(3) at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics and Statistics;
(4) a major in the Science subject areas of Mathematics or Statistics;
(5) a major in Education;
(6) at least 84 credit points of units of study in Curriculum and Professional Studies in Secondary Education; and
(7) no more than 100 credit points from Junior units of study.

BEd(Secondary)/BSc(Psychology) combined degrees

115. To qualify for the award of the pass degrees a student shall complete, over ten semesters, units of study having a total value of at least 240 credit points including:

(a) Year I
(1) Junior units of study in Education, as specified in the table of units of study, total of 12 credit points; and
(2) specified Junior units of study in Psychology, 12 credit points; and
(3) Junior units of study in Science, 24 credit points, of which 12 credit points must be in Mathematics and 12 in Chemistry.

(b) Year II
(1) units of study in Education, as specified in the table of units of study, total of 18 credit points; and
(2) specified Intermediate level units of study in Psychology, 18 credit points; and
(3) Intermediate level units of study selected from Science Table 1,12 credit points, which must be in the selected Science teaching subject.

(c) Year III
(1) units of study in Education, as specified in the table of units of study, total of 12 credit points; and
(2) specified Intermediate level units of study in Psychology, 6 credit points; and
(3) specified Senior units of study in Psychology, 24 credit points.

(d) Year IV
(1) units of study in Education, as specified in the table of units of study, including professional experience, 24 credit points; and
(2) specified units of study in Psychology, 24 credit points.

(e) Year V
(1) units of study in Education, as specified in the table of units of study, including professional experience, 16 credit points; and
(2) specified units of study in Psychology, 20 credit points; and
(3) senior units of study selected from Science Table 1,12 credit points, to complete study in the Science teaching subject.

Science/Nursing: Joint Resolutions

116. The term Bachelor of Nursing in these joint resolutions means either the Bachelor of Nursing (Pre-registration) or Bachelor of Nursing (Honours).

117. Candidates enrolled the Bachelor of Nursing by block mode are not eligible to undertake study in the combined degree course.

118. A student may proceed concurrently to the degrees of Bachelor Nursing and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics).

119. To qualify for the award of the pass degrees a student shall complete, over ten semesters, units of study having a total value of at least 240 credit points including:
(1) at least 96 credit points from Science subject areas of which there is:
(a) at least 12 credit points from the Science subject areas of Mathematics and Statistics;
(b) at least 24 credit points of Junior units of study from at least two Science subject areas other than Mathematics or Statistics;
(c) a major in a Science area; and
(d) no more than 60 credit points from Junior Science units of study;
(2) at least 132 credit points of units of study listed in Table 3, for the Bachelor of Nursing; and
(3) at least 12 credit points of electives taken from either the Faculty of Nursing or the Faculty of Science.

120. To qualify for the award of the pass degree in an Advanced stream of the BSc degree, a student shall complete the requirements for the BN/BSc in Section 76 above and in addition, except with the permission of the Dean:
(1) include at least 12 credit points of Science Intermediate units of study at either the Advanced level or as TSP units;
(2) include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area; and
(3) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

121. To qualify for the award of the pass degree in an Advanced Mathematics stream of the BSc degree, a student shall complete the requirements for the BN/BSc in Section 74 above and in addition, except with the permission of the Dean:
(1) include at least 12 credit points of Intermediate units of study in the subject areas of Mathematics and Statistics at either the Advanced level or as TSP units;
(2) include at least 24 credit points of Senior units of study in the subject areas of Mathematics and Statistics at the Advanced level or as TSP units; and
(3) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.

122. Students who are qualified to do so may undertake honours courses in either or both degrees or a joint honours course on completion of the combined degree.

123. Students may abandon the combined degree course and elect to complete either a BSc or a BN in accordance with the resolutions governing those degrees.

124. Students will be under the general supervision of the Faculty of Nursing.

125. The Deans of the Faculties of Nursing and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in these resolutions.
Joint Resolutions for Bachelor of Applied Science (Exercise and Sport Science) /Bachelor of Science (Nutrition)

126. A student may proceed concurrently to the degrees of Bachelor of Applied Science (Exercise and Sport Science) and Bachelor of Science (Nutrition).

127. To qualify for the award of the degrees a student shall complete over ten semesters units of study having a total value of at least 240 credit points as specified in Table IF Part E, including:
(1) at least 138 credit points from Science subject areas including at least 12 credit points from Mathematics and Statistics;
(2) an Honours year in Nutrition or Nutrition and Dietetics;
(3) at least 102 credit points of units of study in Exercise and Sport Science listed in Table 9.2 of Faculty Resolutions for the degree of BAppSc (Exercise and Sport Science), Faculty of Health Sciences.

128. A student who does not qualify to undertake Year 5 of the combined degree course or who chooses to exit after completing Year 4 may:
(1) graduate with the degree of Bachelor of Applied Science (Exercise Sport Science and Nutrition) in accordance with the resolutions of the Faculty of Health Sciences; or
(2) elect to undertake an honours course in Exercise and Sports Science and graduate with the degree of Bachelor of Applied Science (Exercise Sport Science and Nutrition) Honours in accordance with the resolutions of the Faculty of Health Sciences.

129. A student who so qualifies after completing Year 4 of the program may elect to undertake an honours course in Exercise and Sports Science and graduate with the degree of Bachelor of Applied Science (Exercise Sport Science and Nutrition) honours in accordance with the resolutions of the Faculty of Health Sciences.

130. After completing at least two semesters in the program a student may abandon the combined degree course and elect to complete either a BSc, a BSc (Nutrition), a BAppSc (Exercise and Sport Science) or a BAppSc (Exercise, Sport Science and Nutrition) in accordance with the resolutions governing those degrees.

131. Students in Years 1-4 of the program will be under the general supervision of the Faculty of Health Sciences; students in the honours year will be under the supervision of the faculty in which the honours course is being undertaken.

132. The Deans of the Faculties of Health Sciences and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in these resolutions.

Joint Resolutions for Bachelor of Science (Advanced)/Bachelor of Medicine and Bachelor of Surgery

BSc(Advanced)/MB BS combined degrees

133. A student may proceed through the degree of Bachelor of Science (Advanced) to the degrees of Bachelor of Medicine and Bachelor of Surgery.

134. To qualify for the award of the degrees a student shall:
(1) complete units of study having a total value of at least 336 credit points;
(2) maintain a AAM of 80 or above in each of the first three years of the program;
(3) satisfactorily complete five SMTP units in the first three years of the program; and
(4) meet the requirements of the BSc (Advanced) degree outlined below.

135. Students who fail to satisfy 137(2) and/or (3) will be transferred to candidature for the BSc(Advanced) degree.

136. To qualify for the award of the pass degree in the BSc (Advanced) stream, a student shall complete the requirements for the BSc degree as described in Section 7 with the exception of 7(5) in the resolutions of the Faculty of Science and in addition, except with the permission of the Deans of Science and Medicine:
(1) include no more than 48 credit points from Junior units of study;
(2) include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units;
(3) include at least 48 credit points of Senior units of study of which at least 24 are completed at the Advanced level or as TSP units in a single Science subject area; and
(4) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment. Candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed in the Advanced stream. Candidates who fail to achieve a Credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science.

137. To qualify for the award of the degrees of Bachelor of Medicine and Bachelor of Surgery a student shall complete units of study having a total value of 192 credit points as required by the Resolutions of the Faculty of Medicine.

138. Students who qualify to undertake honours in the BSc (Advanced) degree may elect to do so either:
(1) by suspending candidature from the MBBS degrees for one year, with the permission of the Faculty of Medicine; or
(2) after completion of the combined course.

139. Students may abandon the combined degree course and elect to complete the BSc (Advanced) degree.

140. Students will be under the general supervision of the Faculty of Science until the end of the semester in which they complete the requirements for the science degree. After that they will be under the general supervision of the Faculty of Medicine.

141. The Deans of the Faculties of Medicine and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in these resolutions.

Enrolment in more/less than minimum load
142. A student may not enrol without first obtaining permission from the Dean in additional units of study once the degree requirements of 144 credit points have been satisfied.

Repeating a unit of study
143. Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of pass or better, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.

144. A student may not enrol in a unit of study which they have completed previously with a grade of pass or better.

Cross-institutional enrolment
145. 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:
(1) the unit of study content is material not taught in any corresponding unit of study in the University; or
(2) the student is unable for good reason to attend a corresponding unit of study at the University.

Restrictions on enrolment
146. Units of study which overlap substantially in content are noted in the Tables of undergraduate units of study. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.

Satisfactory progress
147. If a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Assessment policy
148. Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

149. Where units of study in a subject area are offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).

150. Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

Credit Transfer Policy
151. Credit will not be granted for units of study completed more than ten years prior to application, except with the permission of the Dean.

152. Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in Table I or as non-specific credit.

153. The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units of study from other degrees for which credit is maintained or a degree has been conferred.

154. All students, notwithstanding any credit transfer, must complete at least 24 credit points of Senior Science units of study towards a major taken at the University of Sydney.

Candidates enrolled before 2005
155.
(1) These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January, 2005.
(2) With the permission of the Faculty of Science, candidates who first enrolled for the degree prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2008 choose to qualify for the degree under the old resolutions.
(3) With the permission of the Faculty of Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

Specific glossary for the BSc and the BSc/BA

Degree means, in the Resolutions for the BSc, the degree of the Bachelor of Science.
Degrees means, in the Resolutions for the BSc/BA, the degrees of Bachelor of Science and Bachelor of Arts.
Requirements means, in the Resolutions for the BSc, coursework requirements for the award of the degree of Bachelor of Science.
Requirements means, in the Resolutions for the BSc/BA, coursework requirements for the award of the degree of Bachelor of Science and Bachelor of Arts.
Student means, in the Resolutions for the BSc, a person enrolled as a candidate for the degree of Bachelor of Science.
Student means, in the Resolutions for the BSc/BA, a person enrolled as a candidate for the degree of Bachelor of Science and Bachelor of Arts.
Completion of a unit of study means that the assessment requirements have been satisfied and a grade of pass or better has been achieved.
Junior unit of study is a 1000 or first-year stage unit. Its prerequisites or assumed knowledge are non-tertiary qualifications and corequisites are other Junior units of study.
Intermediate unit of study is a 2000 or second-year stage unit. Its prerequisites or assumed knowledge are Junior or Intermediate units of study and corequisites are other Intermediate units of study. (Specific to the Faculty of Science.)
Senior unit of study is a 3000 or third-year stage unit. Its prerequisites or assumed knowledge are Junior, Intermediate or Senior units of study and corequisites are other Senior units of study. (Specific to the Faculty of Science.)
Honours unit of study is a 4000 or fourth-year stage unit offered within an honours course.
Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.
Major in the BSc normally requires the completion of a minimum of 24 credit points of Senior units of study in one Science area, including any units of study specified in the Table of undergraduate units of study as compulsory for that major. A student may not count a unit of study toward more than one major. (A major in Psychology requires 48 credit points of Intermediate and Senior Psychology units of study including PSYC (2111 or 2011), PSYC (2112 or 2012), PSYC (2113 or 2013) and PSYC (2114 or 2014). No other Intermediate Psychology units can be counted towards the major).
Major in the Faculty of Arts is normally 36 credit points from Senior units of Study in an Arts subject area.
Major in the Faculty of Economics and Business is usually a three year sequence of study (in some cases a two year sequence) in a particular Economics and Business subject area.
Major in the Faculty of Education is 36 credit points from Senior units of study in the subject area of Education.
Dean means the Dean of Science
Faculty means the Faculty of Science.
Science subject area means a defined field of study in science.
Degree means the Bachelor of Science.
Requirements means coursework requirements for the award of the degree of Bachelor of Science.
Student means a person enrolled as a candidate for the degree of Bachelor of Science.
TSP means the Talented Student Program in the Faculty of Science.
SCIWAM means the weighted average mark calculated by the Faculty from the results for all Intermediate and Senior units of study with a weighting of 2 for Intermediate units and 3 for Senior units.

Bachelor of Computer Science and Technology

Resolutions of the Senate

Bachelor of Computer Science and Technology

1. These Resolutions of the Senate relate to the degree of Bachelor of Computer Science and Technology including its streams:
(a) Bachelor of Computer Science and Technology;
(b) Bachelor of Computer Science and Technology (Advanced).
These Resolutions must be read in conjunction with The University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate courses, and the relevant Faculty Resolutions.

Requirements for the pass degree
2. To qualify for the award of the pass degree students must:
(1) complete successfully units of study giving credit for a total of 144 credit points; and
(2) satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Requirements for the honours degree
3. To qualify for the award of the honours degree students must complete the honours requirements published in the faculty resolutions relating to the course.

Resolutions of the Faculty

These resolutions must be read in conjunction with the University of Sydney (Coursework) Rule, and the Glossary appended to these Faculty Resolutions.

Section 1

Streams
1. The Bachelor of Computer Science and Technology degree comprises the following streams:
(a) Bachelor of Computer Science and Technology; and
(b) Bachelor of Computer Science and Technology (Advanced).

2. A student for the BCST degree in any stream may apply to the Dean for permission to transfer candidature to any other stream.

3. The testamur for the Bachelor of Computer Science and Technology shall specify the stream for which it is awarded.

Units of study
4. The units of study, which may be taken for the degree, are those that may be taken for the degree of Bachelor of Information Technology, the tables for which indicate:
(1) designation as Junior, Intermediate, Senior or Honours and, where appropriate, as Advanced units of study;
(2) credit point values;

(3) assumed knowledge, corequisites/prerequisites;
(4) the semesters in which they are offered; and
(5) the units of study with which they are mutually exclusive.

5. The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table III.

6. A student who enrols, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Information Technology, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

Requirements for the pass degree
7. To qualify for the award of the degree a student shall complete units of study having a total value of at least 144 credit points, of which:
(1) at least 90 credit points are from Table III associated with the degree of Bachelor of Information Technology, including:
(a) at least 24 credit points from **III** (i);
(b) at least 36 credit points from **III** (iv) and/or **III** (v); and
(c) at least 6 credit points from Table III (v);
(2) at least 18 credit points are from the Science subject areas of Mathematics and/or Statistics;
(3) at least 36 credit points are from units which have codes starting other than INFO, COMP, ISYS, MULT, NETS, SOFT;
(4) at most 72 credit points are from Junior units.

8. A major in an Information Technology subject area requires completion of units of study as specified in Table IIIA associated with the degree of Bachelor of Information Technology. The testamur for the degree of Bachelor of Computer Science and Technology shall specify any majors completed.

9. Units of study completed at the University of Sydney Summer School which correspond to units of study specified in Section 7 may be credited towards the course requirements.

Honours courses
10. There shall be honours courses in Computer Science and Information Systems. With permission of the Dean, candidates may be allowed to complete an honours course available in the Faculties of Science, Arts or Economics, provided that the candidate's plan of study is appropriate for the degree.

11. To qualify to enrol in an honours course, students shall:
(1)
(a) have qualified for the award of the BCST degree; or
(b) be a pass graduate of the Faculty of Science; or
(c) be a pass graduate holding a degree equivalent to the BCST from another institution;
(2) have completed a minimum of 24 credit points of units of study from Table Ill(iv) and/or III(v) associated with the degree of Bachelor of Information Technology (or equivalent at another institution);
(3) have achieved either a Credit average in the relevant units of study used to satisfy Section 11 (2) above, or a SCIWAM of at least 60; and
(4) satisfy any additional criteria set by the Head of Department concerned.

12. Students shall complete the requirements for the honours course full-time over two consecutive semesters.

13. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

14. To qualify for the award of an honours degree, students shall complete while enrolled in an honours course, 48 credit points of units of study at honours level, of which at least 42 credit points must be from honours units listed in Tables Ill(iv) and III(v), including INF04991, INF04992 and INF04999.

15. The grade of honours and the honours mark are determined by performance in the honours course.

16. A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.

17. A student may not re-attempt an honours course in a single subject area. A student who does not meet the requirements for the award of honours, and who entered the honours course under clause ll(1)(a), shall graduate with the BCST degree.

18. A student who is qualified to enrol in two honours courses may either:
(1) complete the honours courses in the two subject areas separately and in succession; or
(2) complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.

Designated streams - BCST (Advanced)
19. To qualify for the award of the pass degree in the BCST(Advanced) stream, a student shall complete the requirements for the BCST degree in Section 7 so that except with the permission of the Dean:
(1) they have completed at least 12 credit points of Intermediate units of study from Table III (i) and/or III (ii) which are at either the Advanced level or as TSP units;
(2) they have completed at least 24 credit points from Table III (iv) and/or III (v) at either the Advanced level or the Honours level or as TSP units;
(3) they have completed at least 48 credit points from Senior or Honours units of study; and
(4) they have maintained in Intermediate and Senior units of study an average mark of 65 or greater in each year of enrolment;
(5) candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Computer Science and Technology degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Computer Science and Technology (Advanced) candidates. Candidates who fail to achieve a Credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Computer Science and Technology.

20. Students who have completed at least 48 credit points may be permitted to transfer to the BCST (Advanced) stream from the BCST if:
(1) their mark averaged over all attempted units of study is 75 or greater; and
(2) they are able to enrol in the required number of Advanced level units or TSP units.

Section 2

Enrolment in more/less than minimum load
21. A student may not enrol without first obtaining permission from the Dean in additional units of study once the degree requirements of 144 credit points have been satisfied.

Repeating a unit of study
22. Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of pass or better, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.

23. A student may not enrol in a unit of study which they have completed previously with a grade of pass or better.

24. A student who has been awarded a Pass (Concessional) in a unit of study may repeat that unit but, if subsequently awarded a grade of pass or better, no further credit points will be gained unless the unit of study previously had not been credited under Section 7(4).

Cross-institutional enrolment
25. 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:
(1) the unit of study content is material not taught in any corresponding unit of study in the University; or
(2) the student is unable for good reason to attend a corresponding unit of study at the University.

Restrictions on enrolment
26. Units of study which overlap substantially in content are noted in the Tables of undergraduate units of study. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.

Satisfactory progress
27. If a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Assessment policy
28. Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

29. Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).
30. Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

Credit transfer policy
31. Credit will not be granted for units of study completed more than ten years prior to application, except with the permission of the Dean.

32. Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in the Table of undergraduate units of study or as non-specific credit.

33. The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units from other degrees for which credit is maintained or a degree has been conferred.

34. All students, not withstanding any credit transfer, must complete at least 24 credit points from Table III (iv) and/or III (v) at the University of Sydney.

Candidates enrolled before 2005
35.
(1) These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2005.
(2) With the permission of the Faculty of Science, candidates who first enrolled for the degree prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2008 choose to qualify for the degree under the old resolutions.
(3) With the permission of the Faculty of Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

Specific glossary for the BCST

Completion of a unit of study means that the assessment requirements have been satisfied and a grade of pass or better has been achieved.
Junior unit of study is a 1000 or first-year stage unit. Its prerequisites or assumed knowledge are non-tertiary qualifications and corequisites are other Junior units of study.
Intermediate unit of study is a 2000 or second-year stage unit. Its prerequisites or assumed knowledge are Junior or Intermediate units of study and corequisites are other Intermediate units of study. (Specific to the Faculty of Science.)
Senior unit of study is a 3000 or third-year stage unit. Its prerequisites or assumed knowledge are Junior, Intermediate or Senior units of study and corequisites are other Senior units of study. (Specific to the Faculty of Science.)
Honours unit of study is a 4000 or fourth-year stage unit offered within an honours course.
Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.
Major in the Faculty of Science normally requires the completion of a minimum of 24 credit points of Senior units of study in one Science area, including any units of study specified in the Table of undergraduate units of study as compulsory for that major. A student may not count a unit of study toward more than one major. (A major in Psychology requires 48 credit points of Intermediate and Senior Psychology units of study including PSYC (2111 or 2011), PSYC (2112 or 2012), PSYC (2113 or 2013) and PSYC (2114 or 2014). No other Intermediate Psychology units can be counted towards the major).
Major in the Faculty of Arts is normally 36 credit points from Senior units of Study in an Arts subject area.
Major in the Faculty of Economics and Business is usually a three year sequence of study (in some cases a two year sequence) in a particular Economics and Business subject area.
Major in the Faculty of Education is 32 credit points from Senior units of study in the subject area of Education.
Faculty means the Faculty of Science.
Dean means the Dean of Science
Science subject area means a defined field of study in science.
Degree means the Bachelor of Computer Science and Technology.
Requirements means coursework requirements for the award of the degree of Bachelor of Computer Science and Technology.
Student means a person enrolled as a candidate for the degree of Bachelor of Computer Science and Technology.
SCIWAM means the weighted average mark calculated by the Faculty from the results for all Intermediate and Senior units of study with a weighting of 2 for Intermediate units and 3 for Senior units.
TSP means the Talented Student Program in the Faculty of Science.

Bachelor of Information Technology

Resolutions of the Senate

Bachelor of Information Technology

1. These Resolutions of the Senate relate to the degree of Bachelor of Information Technology.
These Resolutions must be read in conjunction with the University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate courses, and the relevant Faculty Resolutions.

Requirements for the pass degree
2. To qualify for the award of the pass degree students must:
(1) complete successfully units of study giving credit for a total of 192 credit points; and
(2) satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Requirements for the honours degree
3. To qualify for the award of the honours degree students must complete the honours requirements published in the faculty resolutions relating to the course.

Resolutions of the Faculty

These resolutions must be read in conjunction with the University of Sydney (Coursework) Rule and the Glossary appended to these Faculty Resolutions.

Section 1

Units of study
1. The units of study, which may be taken for the degree, are set out in Table III and the Tables of units of study associated with the degrees of BSc, BA, BEc, and BE, all of which tables indicate:

(1) designation as Junior, Intermediate, Senior or Honours and, where appropriate, as Advanced units of study;
(2) credit point values;
(3) assumed knowledge, corequisites/prerequisites;
(4) the semesters in which they are offered; and
(5) the units of study with which they are mutually exclusive.

2. The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table III.

3. A student who enrols, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Information Technology, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

Requirements for the Bachelor of Information Technology degree

4. To qualify for the award of the degree a student shall complete units of study having a total value of at least 192 credit points, of which:
(1) at least 144 credit points are from Table III, including:
(a) at least 24 credit points from III (i) with average results of Credit or better;
(b) at least 72 credit points from III (iv) and/or III (v); and
(c) either INFO3600 or INFO (4991 and 4992);
(2) at least 18 credit points are from the Science subject areas of Mathematics and/or Statistics;
(3) at least 36 credit points are from units which have codes starting other than INFO, COMP, ISYS, MULT, NETS, SOFT;
(4) at most 72 credit points are from Junior units; and
(5) at least 84 credit points are from Senior and/or Honours units.

5. Candidates who fail to maintain the required credit average in Table III(i) units will be transferred to candidature for the Bachelor of Computer Science and Technology degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Information Technology candidates. Candidates who fail to achieve the required credit average in Table III(i) units in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Computer Science and Technology.

6. A major in the Bachelor of Information Technology normally requires the completion of 24 credit points of Senior and/or honours units of study, together with other Junior and Intermediate units, as specified in Table IIIA, except that any unit of study listed may be replaced by another unit which is mutually exclusive with it, for example, an Advanced equivalent:
(1) a major in Principles of Computer Science - all units listed in Table IIIA(i) as core, and at least 6 credit points from units listed as electives;
(2) a major in Information Systems - all units listed in Table IIIA(ii) as core, and at least 6 credit points from units listed as electives;
(3) a major in Multimedia Technology - all units listed in Table IIIA(iii) as core, and at least 12 credit points from units listed as electives;
(4) a major in Networks and Systems - all units listed in Table IIIA(iv) as core, and at least 6 credit points from units listed as electives;
(5) a major in Software Development - all units listed in Table IIIA(v) as core, and at least 6 credit points from units listed as electives;
(6) a major in Digital Design - all units listed in Table IIIA(vi) as core, and at least 12 credit points from units listed as electives;
(7) a major in Computational Science - all units listed in Table IIIA(vii) as core and at least 12 credit points from units listed as electives.
(8) a major in Language Technology - all units listed in Table IIIA(viii) and 4 credit points from units listed as electives.

7. It is not necessary to complete the requirements of any major in order to qualify for the award of the degree.

8. Units of study completed at the University of Sydney Summer School which correspond to units of study specified in Section 4 may be credited towards the course requirements.

9. The testamur for the degree of Bachelor of Information Technology shall specify the major(s) completed in the degree.

Requirements for the Bachelor of Information Technology (Honours) degree

10. There shall be an honours degree associated with the Bachelor of Information Technology. Entry into the honours degree is only by transfer from the BIT.

11. To qualify to transfer into the Bachelor of Information Technology (Honours) degree, students shall:
(1) have completed at least 144 credit points from the Bachelor of Information Technology degree or equivalent at another institution;
(2) have completed a minimum of 24 credit points of units of study from Table Ill(iv) and/or III(v) associated with the degree of Bachelor of Information Technology or the equivalent at another institution;
(3) have achieved either a credit average in the relevant units of study used to satisfy 10(2) above, or a SCIWAM of at least 60; and
(4) satisfy any additional criteria set by the Head of Department concerned.

12. Once enrolled in the BIT (Honours) course, students shall complete the requirements for the honours course full-time, over two consecutive semesters.

13. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

14. To qualify for the award of the Bachelor of Information Technology (Honours) degree, students shall complete 192 credit points as outlined in Section 4, including at least 42 credit points from honours level units, including INF04991, INF04992 and INFO 4999, with a result of at least 65 in INF04999.

15. The degree of Bachelor of Information Technology (Honours) shall recognise the same majors as the BIT. The testamur shall specify the major(s) completed in qualifying for the award. These majors will be noted independently from the grade of honours awarded.

16. The grade of honours and the honours mark are determined by performance in all Honours level units attempted.

17. A student with an honours mark of 90 or greater and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.

18. A student may not re-attempt the Bachelor of Information Technology (Honours) course. However, students who fail to meet the requirements for the award of honours and who have not already satisfied the requirements of the BIT may elect to transfer back to the BIT. A student who does not meet the requirements for the award of honours and who has completed the requirements of the BIT shall graduate with the BIT degree.

19. A student who is qualified to enrol in two honours courses may either:
(1) complete the honours courses in the two subject areas separately and in succession; or
(2) complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.

Transfer between the BIT and other degrees

20. Students who have completed at least 48 credit points may be permitted to transfer to the Bachelor of Information Technology degree from other degree programs, if their mark averaged over all attempted units of study is 70 or greater. A quota may apply to the number of students allowed to transfer into the BIT in a given calendar year.

21. Students enrolled in the Bachelor of Information Technology who have satisfied the requirements of the BSc, BSc (Adv), BCST or BCST (Adv) degrees, or with permission of the Dean, may elect

to discontinue their enrolment in the Bachelor of Information Technology degree and graduate with the BSc, BSc (Adv), BCST or BCST (Adv) degree, as appropriate.

Section 2

Enrolment in more/less than minimum load
22. A student may not enrol without first obtaining permission from the Dean in additional units of study once the degree requirements of 192 credit points have been satisfied.

Repeating a unit of study
23. Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of Pass or better, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.

24. A student may not enrol in a unit of study which they have completed previously with a grade of pass or better.

Cross-institutional enrolment
25. 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:
(1) the unit of study content is material not taught in any corresponding unit of study in the University; or
(2) the student is unable for good reason to attend a corresponding unit of study at the University.

Restrictions on enrolment
26. Units of study which overlap substantially in content are noted in the Tables of undergraduate units of study. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.

Satisfactory progress
27. If a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Assessment policy
28. Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

29. Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).

30. Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

Credit transfer policy
31. Credit will not be granted for units of study completed more than ten years prior to application, except with the permission of the Dean.

32. Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in Table III, or as non-specific credit.

33. The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units from other degrees for which credit is maintained or a degree has been conferred.

34. All students, notwithstanding any credit transfer, must complete at least 48 credit points of units from Table III (iv) and/or III (v) at the University of Sydney.

Candidates enrolled before 2005
35.
(1) These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2005.
(2) With the permission of the Faculty of Science, candidates who first enrolled for the degree prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2008 choose to qualify for the degree under the old resolutions.
(3) With the permission of the Faculty of Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

Specific glossary for the BIT

Completion of a unit of study means that the assessment requirements have been satisfied and a grade of pass or better has been achieved.
Junior unit of study is a 1000 or first-year stage unit.
Intermediate unit of study is a 2000 or second-year stage unit.
Senior unit of study is a 3000 or third-year stage unit.
Honours unit of study is a 4000 or fourth-year stage unit offered within an honours course.
Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.
Dean means the Dean of Science.
Faculty means the Faculty of Science.
Science subject area means a defined field of study in science.
Degree means the Bachelor of Information Technology.
Requirements means coursework requirements for the award of the degree of Bachelor of Information Technology.
Student means a person enrolled as a candidate for the degree of Bachelor of Information Technology.
TSP means the Talented Student Program in the Faculty of Science.
SCIWAM means the weighted average mark calculated by the Faculty from the results for all Intermediate and Senior units of study with a weighting of 2 for Intermediate units and 3 for Senior units.

Bachelor of Medical Science

Resolutions of the Senate

Bachelor of Medical Science

1. These Resolutions of the Senate relate to the Bachelor of Medical Science and the Combined degree course:
(a) Bachelor of Engineering/Bachelor of Medical Science.
These Resolutions must be read in conjunction with the University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate courses, and the relevant Faculty Resolutions.

Requirements for the pass degree
2. To qualify for the award of the pass degree students must:
(1) complete successfully units of study giving credit for a total of 144 credit points; and
(2) satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Requirements for the honours degree
3. To qualify for the award of the honours degree students must complete the honours requirements published in the faculty resolutions relating to the course.

Requirements for the combined degrees
4. To qualify for the award of the two degrees in the combined degree course students must complete the requirements published in these and the other relevant faculty resolutions relating to the course.

Resolutions of the Faculty

These resolutions must be read in conjunction with the University of Sydney (Coursework) Rule and the Glossary appended to these Faculty Resolutions.

Section 1

Units of study

1. The units of study, which may be taken for the degree, are set out in Table IV together with:
   (1) designation as Junior, Intermediate, Senior and Honours and, where appropriate, as an Advanced unit of study;
   (2) credit point value;
   (3) assumed knowledge, qualifying units, corequisites and prerequisites;
   (4) the semester in which they are offered; and
   (5) the units of study with which they are mutually exclusive.

2. A student may enrol, in accordance with Section 4(5), in a unit of study prescribed for a degree other than the Bachelor of Medical Science and shall satisfy the prerequisites, corequisites, qualifying and other requirements prescribed for such units of study for that other degree.

3. The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in the Tables of undergraduate units of study.

Requirements for the pass degree

4. In order to qualify for the award of the degree a student shall complete units of study having a total value of at least 144 credit points, including:
   (1) at least 48 credit points from Junior units of study, comprising MBLG1001 and 12 credit points each from Chemistry, Mathematics and Physics or Computational Science and 6 credit points from Biology;
   (2) no more than 60 credit points from Junior units of study;
   (3) 48 credit points of Intermediate core units of study listed in Table IV;
   (4) at least 36 credit points of Senior units of study taken from the subject areas of Anatomy/Histology, Biology (Genetics), Biochemistry, Cell Pathology, Immunology, Infectious Diseases, Microbiology, Pharmacology and Physiology;
   (5) no more than 12 credit points from units of study other than core units of study.

5. Units of study taken at the University of Sydney Summer School which correspond to units of study specified in Section 4 may be credited towards the course requirements.

Honours courses

6. There shall be honours courses in Science subject areas listed in Table IV D (Bachelor of Medical Science honours units of study).

7. In order to qualify to enrol in an honours course, students shall:
   (1) either:
      (a) have qualified for the award of the pass degree; or
      (b) be a pass graduate in Medical Science of the Faculty of Science; or
      (c) be a pass graduate holding a Bachelor of Medical Science degree or an equivalent qualification from another institution;
   (2) have completed a minimum of 24 credit points of Senior units of study relating to the intended honours course (or equivalent at another institution);
   (3) have achieved either:
      (a) a credit average in the relevant Senior Science units of study; or
      (b) a SCIWAM of at least 60 (or equivalent at another institution); and
   (4) satisfy any additional criteria set by the Head of Department concerned.

8. Students shall complete the requirements for the course full-time over two consecutive semesters.

9. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

10. To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in one subject area from those listed in Table IV

11. The grade of honours and the honours mark are determined by performance in the honours course.

12. A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.

13. A student who is qualified to enrol in two honours courses may either:
   (1) complete the honours courses in the two subject areas separately and in succession; or
   (2) complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas.

14. A student may not re-attempt an honours course in a single subject area.

Combined degree - Bachelor of Engineering/Bachelor of Medical Science

15. A student may proceed concurrently to the degrees of Medical Science and any stream of the Bachelor of Engineering (except Civil Engineering or Electronic Commerce).

16. To qualify for the award of the pass degrees a student shall complete units of study totalling 240 credit points including:
   (1) at least 160 credit points from units of study as prescribed in the Engineering Specialisation tables for the specialisation being taken, including an interdisciplinary thesis;
   (2) at least 24 credit points from Junior Science units of study [which may be common with those of 16(1)] but including CHEM1102, MBLG1001 and 12 credit points of Mathematics;
   (3) 48 credit points of Intermediate core units of study as listed in Table IV of units of study for the Bachelor of Medical Science;
   (4) at least 24 credit points of Senior units of study from the subject areas of Anatomy and Histology, Biology (Genetics), Biochemistry, Cell Pathology, Immunology, Infectious Diseases, Microbiology, Pharmacology and Physiology as listed in Resolution 4(4); and
   (5) a 12 credit point interdisciplinary thesis jointly supervised by departments from Engineering and Science.

17. Students who are so qualified may be awarded honours in the BE degree or undertake an honours course in the BMedSc degree.

18. Students may abandon the combined degree course and elect to complete either a BMedSc or a BE in accordance with the resolutions governing those degrees.

19. Students will be under the general supervision of the Faculty of Engineering.

20. The Deans of the Faculties of Engineering and Science shall jointly exercise authority in any matter concerning the combined degrees not otherwise dealt with in these resolutions.

BMedSc/MB BS combined degrees

21. A student may proceed through the degree of Bachelor of Medical Science to the degrees of Bachelor of Medicine and Bachelor of Surgery.

22. To qualify for the award of the degrees a student shall:
   (1) complete units of study having a total value of at least 336 credit points;
   (2 maintain a AAM of 80 or above in each of the first three years of the program;
   (3) satisfactorily complete five SMTP units in the first three years of the program; and
   (4) meet the requirements of the BMedSc degree outlined below.

23. Students who fail to satisfy 22(2) and/or (3) will be transferred to candidature for the BMedSc degree.

24. To qualify for the award of the degree of Bachelor of Medical Science a student shall complete units of study having a total value of at least 144 credit points, including:
(1) at least 48 credit points from Junior units of study, comprising MBLG1001 and 12 credit points each from, Chemistry, Mathematics and Physics or Computational Science and 6 credit points from Biology;
(2) no more than 60 credit points from Junior units of study;
(3) 48 credit points of Intermediate core units of study listed in Table IV;
(4) at least 36 credit points of Senior units of study taken from the subject areas of Anatomy/Histology, Biology (Genetics), Biochemistry, Cell Pathology, Immunology, Infectious Diseases, Microbiology, Pharmacology and Physiology;
(5) no more than 12 credit points from units of study other than core units of study.

25. To qualify for the award of the degrees of Bachelor of Medicine and Bachelor of Surgery a student shall complete units of study having a total value of 192 credit points as required by the Resolutions of the Faculty of Medicine.

26. Students who qualify to undertake honours in the BMedSc degrees may elect to do so either:
(1) by suspending candidature from the MBBS degrees for one year, with the permission of the Faculty of Medicine; or
(2) after completion of the combined course.

27. Students may abandon the combined degree course and elect to complete the BMedSc degree.

28. Students will be under the general supervision of the Faculty of Science until the end of the semester in which they complete the requirements for the BMedSc degree. After that they will be under the general supervision of the Faculty of Medicine.

29. The Deans of the Faculties of Medicine and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in these resolutions.

Repeating a unit of study
30. Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed satisfactorily, the Head of Department concerned may exempt the student from certain requirements of the unit of study requirements if satisfied that the relevant competence has been demonstrated.

31. A student may not enrol in a unit of study which they have completed previously with a grade of pass or better.

Cross-institutional enrolment
32. Provided that permission has been obtained in advance, the Dean may permit a student to complete a unit of study or units of study at another institution and have that unit or units of study credited to his/her course requirements provided that either:
(1) the unit of study content is material not taught in any corresponding unit of study in the University; or
(2) the student is unable for good reason to attend a corresponding unit of study at the University.

Restrictions on enrolment
33. Except with the permission of the Dean, candidates may not enrol in an Intermediate core unit of study until they have completed 42 credit points of Junior units of study prescribed by the Faculty.

34. Except with the permission of the Dean, candidates may not enrol in a Senior unit of study:
(1) until they have gained credit for at least 42 credit points from core Intermediate units of study; and
(2) until they have completed the Intermediate units of study prescribed as prerequisites for the Senior unit of study, as set out in Table I.

35. Enrolment in some Senior units of study may be subject to a quota.

36. In satisfying the requirements of Section 4(3) a student may not enrol in units of study which overlap substantially in content with units of study listed in Section 4(4).

37. A student may not enrol without first obtaining permission from the Dean in:
(1) additional units of study once the degree requirements of 144 credit points have been satisfied; or
(2) units of study which may not be counted towards the course requirements.

Satisfactory progress
38. If a student fails or discontinues enrolment in one unit of study twice, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Assessment policy
39. Students may be tested by written and oral examinations, exercises, essays or practical work or any other form that the Faculty may determine.

40. Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other levels.

41. Heads of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

Credit transfer policy
42. Credit will not be granted for units of study completed more than ten years prior to application, except with the permission of the Dean.

43. Advanced standing may be granted as specific credit if the unit of study is considered by the Faculty to be directly equivalent to a unit of study in Table I or Table IV, or as nonspecific credit.

44. The total credit point value of the advanced standing may not be greater than 96 credit points and may not include more than 48 credit points of units from other degrees which have been conferred, or for which credit is maintained in another degree program.

45. All students, notwithstanding any credit transfer, must enrol in at least 36 credit points of Senior units of study in accordance with Section 4(4).

Candidates enrolled before 2005
46.
(1) These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2005.
(2) With the permission of the Faculty of Science, candidates who first enrolled for the degree prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2008 choose to qualify for the degree under the old resolutions.
(3) With the permission of the Faculty of Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

Specific glossary for the BMedSc

AAM means the average mark over all units of study attempted in a given academic year (equivalent to the calendar year).
Completion of a unit of study means that the assessment requirements have been satisfied and a grade of pass or better has been achieved.
Intermediate unit of study is of second-year (2000) level. Its prerequisites or assumed knowledge are Junior or Intermediate units of study and corequisites are other Intermediate units of study.
Senior unit of study is of third-year (3000) level. Its prerequisites or assumed knowledge are Junior, Intermediate or Senior units of study and corequisites are other Senior units of study.
Honours unit of study is a 4000 level unit offered within an honours course.

Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.
Dean means the Dean of Science.
Faculty means to the Faculty of Science.
Degree means the Bachelor of Medical Science.
Requirements means coursework requirements for the award of the degree of Bachelor of Medical Science.
Student means a person enrolled as a candidate for the degree of Bachelor of Medical Science.
TSP means the Talented Student Program in the Faculty of Science.
SCIWAM means the weighted average mark calculated by the Faculty from the results for all Intermediate and Senior units of study with a weighting of 2 for Intermediate units and 3 for Senior units.

Bachelor of Psychology

Resolutions of the Senate

Bachelor of Psychology

1. These Resolutions of the Senate relate to the Bachelor of Psychology.
These Resolutions must be read in conjunction with the University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate course, and the relevant Faculty Resolutions.

Requirements for the degree
2. To qualify for the award of the degree students must:
(1) complete successfully units of study giving credit for a total of 144 credit points;
(2) complete successfully an additional 48 credit points from the fourth year (Honours) units of study in the Science subject area of Psychology; and
(3) satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Resolutions of the Faculty

These resolutions must be read in conjunction with the University of Sydney (Coursework) Rule and the Glossary appended to these Faculty Resolutions.

Section 1

Units of study
1. The units of study, which may be taken for the degree, are set out under Subject areas in Table I together with:
(1) designation as Junior, Intermediate, Senior or Honours and, where appropriate, as Advanced units of study;
(2) credit point values;
(3) assumed knowledge, corequisites/prerequisites;
(4) the semesters in which they are offered; and
(5) the units of study with which they are mutually exclusive.

2. The Dean may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study within the Faculty other than those specified in Table I.

3. A student who enrols, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Psychology, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

Requirements for the degree
4. To qualify for the award of the degree a student shall:
(1) complete units of study having a total value of at least 144 credit points where:
(a) at least 12 credit points are from Junior units of study in the Science subject area of Psychology, with an average grade of Credit or better;
(b) at least 54 credit points are from Intermediate and Senior units of study in the Science subject area of Psychology.* The Intermediate units must include PSYC (2011 or 2111), PSYC (2012 or 2112), PSYC (2013 or 2113) and PSYC (2014 or 2114), with an average grade of Distinction or better. The remainder of the 54 credit points must be Senior units of study in the Science subject area of Psychology and must include PSYC3010 and PSYC3012, and, except with the permission of Faculty, with an average grade of Distinction or better; *Note HPSC3023 Psychology & Psychiatry History & Phil Psychiatry is available for Senior Psychology students and will count towards a major in Psychology. Successful completion of this unit of study is essential for students intending to take the Theoretical Thesis option in Psychology Honours);
(c) Candidates who fail to maintain the required average in Psychology units will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Psychology candidates. Candidates who fail to achieve the required average in Psychology units in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Science;
(d) at least 96 credit points are from Science subject areas;
(e) at least 12 credit points are from the Science subject areas of Mathematics and Statistics;
(f) at least 12 credit points are Junior units of study from Science subject areas other than Psychology and Mathematics and Statistics; and
(g) no more than 60 credit points are from Junior units of study;
(2) complete 48 credit points from fourth year (honours) units of study in the Science subject area of Psychology with a grade of honours.

5. A maximum of 48 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculty of Science.

6. Units of study completed at the University of Sydney Summer School which correspond to units of study specified in Section 4 and Section 5 may be credited towards the course requirements.

7. Students shall complete the requirements for the honours course full-time over two consecutive semesters.

8. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

9. The grade of honours and the honours mark are determined by performance in the honours course.

10. A student with an honours mark of 90 or greater and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.

11. A student may not re-attempt the Psychology honours course.

Section 2

Enrolment in more/less than minimum load
12. A student may not enrol without first obtaining permission from the Dean in:
(1) additional units of study once the degree requirements of 144 credit points have been satisfied, or
(2) units of study which may not be counted towards the course requirements.

Repeating a unit of study
13. Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of pass or better, the Head of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.

14. A student may not enrol in a unit of study which they have completed previously with a grade of pass or better.

Cross-institutional enrolment
15. 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:
(1) the unit of study content is material not taught in any corresponding unit of study in the University; or
(2) the student is unable for good reason to attend a corresponding unit of study at the University.

Restrictions on enrolment
16. Units of study which overlap substantially in content are noted in the Tables of undergraduate units of study. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.

Satisfactory progress
17. If a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Assessment policy
18. Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

19. Where units of study in a subject area are offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).

20. Heads of department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

Credit transfer policy
21. Credit will not be granted for units of study completed more than nine years prior to application, except with the permission of the Dean.

22. Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in Table I or as non-specific credit.

23. The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units from other degrees for which credit is maintained or a degree has been conferred.

24. All students, notwithstanding any credit transfer, must complete at least 30 credit points of Senior Psychology units (as outlined in 4(l)(c)) at The University of Sydney.

Candidates enrolled before 2005
25.
(1) These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2005.
(2) With the permission of the Faculty of Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

Specific glossary for the BPsych

Completion of a unit of study means that the assessment requirements have been satisfied and a grade of Pass or better has been achieved.
Junior unit of study is a 1000 or first-year stage unit. Its prerequisites or assumed knowledge are non-tertiary qualifications and corequisites are other Junior units of study.
Intermediate unit of study is a 2000 or second-year stage unit. Its prerequisites or assumed knowledge are Junior or Intermediate units of study and corequisites are other Intermediate units of study. (Specific to the Faculty of Science.)
Senior unit of study is a 3000 or third-year stage unit. Its prerequisites or assumed knowledge are Junior, Intermediate or Senior units of study and corequisites are other Senior units of study. (Specific to the Faculty of Science.)
Honours unit of study is a 4000 or fourth-year stage unit offered within an honours course.
Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.
Major in the Faculty of Science normally requires the completion of a minimum of 24 credit points of Senior units of study in one Science area, including any units of study specified in the Table of undergraduate units of study as compulsory for that major. A student may not count a unit of study toward more than one major. (A major in Psychology requires 48 credit points of Intermediate and Senior Psychology units of study including PSYC (2111 or 2011), PSYC (2112 or 2012), PSYC (2113 or 2013) and PSYC (2114 or 2014). No other Intermediate Psychology units can be counted towards the major).
Dean means the Dean of Science.
Faculty means the Faculty of Science.
Science subject area means a defined field of study in science.
Degree means the Bachelor of Psychology.
Requirements means coursework requirements for the award of the degree of Bachelor of Psychology.
Student means a person enrolled as a candidate for the degree of Bachelor of Psychology.
TSP means the Talented Student Program in the Faculty of Science.
SCIWAM means the weighted average mark calculated by the Faculty from the results for all Intermediate and Senior units of study with a weighting of 2 for Intermediate units and 3 for Senior units.

Bachelor of Liberal Studies

Resolutions of the Senate

Bachelor of Liberal Studies

1. These Resolutions of the Senate relate to the Bachelor of Liberal Studies including its streams:
(a) Bachelor of Liberal Studies; and
(b) Bachelor of Liberal Studies (International); and
(c) Bachelor of Liberal Studies (Advanced).
These Resolutions must be read in conjunction with the University of Sydney (Coursework) Rule, which sets out the requirements for all undergraduate courses, and the relevant Faculty Resolutions.

Requirements for the pass degree
2. To qualify for the award of the degree students must:
(1) complete successfully units of study giving credit for a total of 192 credit points; and
(2) satisfy the requirements of all other relevant By-Laws, Rules and Resolutions of the University.

Requirements for the honours degree
3. To qualify for the award of the honours degree students must complete the honours requirements published in the faculty resolutions relating to the course.

Resolutions of the Faculties of Arts and Science

These resolutions must be read in conjunction with the University of Sydney (Coursework) Rule and the glossary appended to these Faculty resolutions.

Section 1

Authority of the Deans
1. The Deans of Arts and Science shall jointly exercise authority in any matter concerning the Bachelor of Liberal Studies degree not otherwise dealt with in the Resolutions of the Senate or these resolutions.

Streams

2. The Bachelor of Liberal Studies degree comprises the following streams:

(a) Bachelor of Liberal Studies; and
(b) Bachelor of Liberal Studies (International); and
(c) Bachelor of Liberal Studies (Advanced).

3. A student for the BLibStud degree in any stream may apply to the Deans of Arts and Science for permission to transfer candidature to any other stream.

4. The testamur for the Bachelor of Bachelor of Liberal Studies shall specify the stream for which it is awarded.

Units of study

5. The units of study, which may be taken for the degree, are set out under subject areas in Table I for the Bachelor of Science and the Tables of units of study for the degree of Bachelor of Arts, including:

(1) designation as Junior, Intermediate, Senior or Honours and, where appropriate, as Advanced units of study;
(2) credit point values;
(3) assumed knowledge, corequisites/prerequisites;
(4) the semesters in which they are offered; and
(5) the units of study with which they are mutually exclusive.

6. The Deans of Arts and Science may permit a student of exceptional merit who is admitted to the Talented Student Program to undertake a unit or units of study other than those specified in Table I for the Bachelor of Science.

7. A student who enrols, in accordance with these resolutions, in a unit or units of study prescribed for a degree other than the Bachelor of Liberal Studies, shall satisfy the prerequisites, corequisites and other requirements prescribed for such units of study.

Requirements for the pass degree

8. To qualify for the award of the degree a student shall complete units of study having a total value of at least 192 credit points, including:

(1) at least 120 Intermediate or Senior credit points;
(2) at least one Arts major and one Science major;
(3) at least 30 credit points, including 18 Intermediate or Senior credit points, from units of study in one language subject area other than English from Part A of the Tables of units of study for the degree of Bachelor of Arts;
(4) a 6 credit point unit of study in communication and analytical skills or in other academic skills as may be prescribed from time to time; and
(5) a minimum of 6 credit points from units of study in Mathematics and Statistics.

9. Unless otherwise defined, a major shall consist of units of study taken in a single subject area from Part A of the Table of units of study for the Bachelor of Arts or from Table I for the Bachelor of Science.

10. A major in an Arts subject area requires 36 credit points from Senior units of study in an Arts subject area listed in Part A of the Table of units of study for the Bachelor of Arts, including any units of study specified in the Table of units of study as compulsory for that major, or of at least 18 Senior credit points from a Part A subject area combined with no more than 18 senior credit points from units of study approved by the Dean of the Faculty of Arts for cross-listing with the major, except in the case of Asian Studies, Medieval Studies, and European Studies where the entire major may be cross-listed and in such other subject areas as may be approved by the Dean of the Faculty of Arts.

11. A major in a Science area normally requires the completion of a minimum of 24 credit points of Senior units of study in that area, including any units of study specified in Table I as compulsory for that major. (A major in Psychology requires 48 credit points of Intermediate and Senior Psychology units of study including PSYC (2111 or 2011), PSYC (2112 or 2012), PSYC (2113 or 2013) and PSYC (2114 or 2014). No other Intermediate Psychology units can be counted towards the major). A student may not count a unit of study toward more than one major.

12. Candidates shall nominate their choice of majors no later than the beginning of the fifth semester of candidature, but with the permission of the Deans of Arts and Science as appropriate, may change the majors during the candidature.

13. A maximum of 28 credit points may be counted towards the degree requirements from units of study offered by faculties other than the Faculties of Arts and Science and in addition to those listed in Part B of the Table of units of study for the Bachelor of Arts.

14. Units of study completed at the University of Sydney Summer School which correspond to units of study specified in Section 8 and Section 13 may be credited towards the course requirements.

15. The testamur for the degree of Bachelor of Liberal Studies shall specify the majors completed in order to qualify for the award.

Award of the degree

16.

(1) A weighted average mark (WAM) will be calculated for each candidate as an overall measure of the performance in the degree Bachelor of Liberal Studies. The WAM is calculated by summing the products of the marks achieved and the weighted credit point values of the units of study taken in the degree and then dividing by the sum of the weighted credit point values, with all attempts at units of study being included in the calculation, except where units of study are discontinued with permission; the formula used is as follows:

$$WAM = \frac{\sum (W_c \times M_c)}{\sum (W_c)}$$

where Wc is the weighted credit point value - i.e. the product of the credit point value and level of weighting of 1 for 1000-1999 units of study or 3 for 2000-2999 units of study and 3000-3999 units of study; where Mc is the mark out of 100 for the unit of study.

(2) The degree shall be awarded with the following grades, as determined by the Deans of Arts and Science on the basis of the WAM:
(a) High Distinction
(b) Distinction
(c) Credit
(d) Pass.

Honours courses

17. There shall be honours courses in all Science subject areas and in the Arts subject areas offering honours (4000-level) units as indicated in the Table of units of study.

18. To qualify to enrol in an honours course, students shall:

(1)
(a) have completed the requirements for the award of the Bachelor of Liberal Studies with the grade of Credit or better; or
(b) be a pass graduate holding an equivalent qualification from another institution;
(2) have completed a major at Credit average in the subject area relating to the intended honours course (or equivalent at another institution);
(3) satisfy any additional criteria set by the Head or Chair of Department concerned.

19. Students shall complete the requirements for the honours course full-time over two consecutive semesters.

20. If the Faculties are satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head or Chair of Department concerned so recommends, permission may be granted to undertake honours half-time over three or four consecutive semesters.

21. To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in the Table of

units of study for the Bachelor of Arts or in Table VI for the Bachelor of Science, as prescribed by the Head or Chair of Department concerned.

22. The grade of honours and the honours mark are determined by performance in the honours course.

23. A student with an honours mark of 90 or greater in an honours subject area shall, if deemed to be of sufficient merit by the Deans of Arts and Science, receive a bronze medal.
24. A student may not re-attempt an honours course in a single subject area.
25. A student who is qualified to enrol in two honours courses may either:
(1) complete the honours courses in the two subject areas separately and in succession; or
(2) complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Deans of Arts and Science.

Bachelor of Liberal Studies (International)

Designated Streams
26. To qualify for the award of the pass degree in the Bachelor of Liberal Studies (International) stream, a student must complete the requirements for the Bachelor of Liberal Studies degree in Section 8 and in addition, except with the permission of the Deans of Arts and Science, include at least the equivalent of 24 credit points from units of study taken over a minimum of one semester while enrolled as an exchange student at an overseas university which has an exchange agreement with The University of Sydney.

27. To qualify to participate in an exchange program a student must have:
(1) completed at least the equivalent of two semesters of full-time study (normally a minimum of 48 credit points completed towards the Bachelor of Liberal Studies); and
(2) maintained an average mark of 65 or greater over all units of study completed.

28. During the period of their exchange program a student must be enrolled as a full-time student in the Bachelor of Liberal Studies at the University of Sydney and take classes at the overseas university that will qualify for a minimum of 24 credit points per semester towards the Bachelor of Liberal Studies degree.

29. Except as specified in these resolutions, students will comply with the rules of and be under the administration of the University of Sydney's Exchange Program.

30. Students who have completed at least 48 credit points may be permitted to transfer from the Bachelor of Liberal Studies to the Bachelor of Liberal Studies (International) stream if:
(1) their marks averaged over all attempted units of study is 75 or greater; and
(2) they are able to qualify for participation in the exchange program.

31. Students enrolled in the Bachelor of Liberal Studies (International) stream who do not qualify for, or are unable or unwilling to participate in an exchange program may, with the permission of the Deans of Arts and Science, transfer to the Bachelor of Liberal Studies.

Bachelor of Liberal Studies (Advanced)

32. To qualify for the award of the pass degree in the Bachelor of Liberal Studies (Advanced) stream, a student must complete the requirements for the Bachelor of Liberal Studies degree in Section 8 and in addition, except with the permission of the Deans of Arts and Science, either:
(1) from units in the Faculty of Science:
(a) include at least 12 credit points of Intermediate units of study at either the Advanced level or as TSP units;
(b) include at least 24 credit points of Senior units of study at the Advanced level or as TSP units in a single Science subject area; and
(c) maintain in Intermediate and Senior units of study in Science subject areas an average mark of 65 or greater in each year of enrolment.
(2) from units in the Faculty of Arts:
(a) include a minimum of 36 credit points and a maximum of 60 credit points in total from designated Advanced units of study;
(b) include a maximum of 36 credit points from Advanced units of study from any one subject area; and
(c) maintain a Credit average across all units of study attempted in each calendar year.

33. Candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Liberal Studies degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Liberal Studies (Advanced) candidates. Candidates who fail to achieve a Credit average across all units of study attempted in the year in which they have otherwise completed the requirements for the degree will be awarded the Bachelor of Liberal Studies.

34. Students who have completed at least 48 credit points may be permitted to transfer from the Bachelor of Liberal Studies to the Bachelor of Liberal Studies (Advanced) stream if:
(1) their mark averaged over all attempted units of study is 75 or greater; and
(2) they are able to enrol in the required number of Advanced level units or TSP units.

Transfer to candidature for the Bachelor of Arts or the Bachelor of Science
35. Candidates who at the end of at least four semesters of candidature have completed at least 96 credit points in total, and who intend to satisfy the requirements for entry to a Fourth Year Honours unit of study or joint honours unit of study for the Bachelor's degrees in Arts or Science, may apply to transfer to candidature for one of these degrees.

36. Candidates who at the end of at least six semesters of candidature have completed units of study which correspond to the entry requirements for Fourth Year Honours for the bachelor's degrees in Arts or Science may apply to transfer to candidature for one of these degrees.

37. Candidates for the degree may, with the permission of the Faculty concerned, transfer to candidature for the pass degrees of Bachelor of Arts or Bachelor of Science no later than the end of the fourth semester of candidature.

38. If a candidate for the degree has completed the normal requirements for the pass degree of Bachelor of Arts, Bachelor of Arts (Asian Studies) or Bachelor of Science, he or she may apply to take one of these degrees provided that candidature for the Bachelor of Liberal Studies is abandoned.

39. The maximum enrolment in a single Arts subject area is 18 Junior credit points and 60 Senior credit points.

Section 2

Enrolment in more/less than minimum load
40. A student may not enrol without first obtaining permission from the Deans of Arts and Science in additional units of study once the degree requirements of 192 credit points have been satisfied.

Repeating a unit of study
41. Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of Pass or better, the Head or Chair of Department concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.

42. A student may not enrol in a unit of study which they have completed previously with a grade of pass or better.

Cross-institutional enrolment
43. Provided that permission has been obtained in advance, the Deans of Arts and Science 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:

(1) the unit of study content is material not taught in any corresponding unit of study in the University; or
(2) the student is unable for good reason to attend a corresponding unit of study at the University.

Restrictions on enrolment
44. Units of study which overlap substantially in content are noted in the Table of units of study for the Bachelor of Arts and in the Tables of undergraduate units of study for the Bachelor of Science. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.

Satisfactory progress
45. If a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Assessment policy
46. Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculties of Arts or Science may determine.

47. Where a unit of study is offered at different levels of difficulty, the performance of students will be matched so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade at the other level(s).

48. Heads or Chairs of Department may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

Credit transfer policy
49. Credit will not be granted for units of study completed more than nine years prior to application, except with the permission of the Deans of Arts and Science.

50. Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study in the Table of units of study for the Bachelor of Arts or from Table I for the Bachelor of Science or as non-specific credit.

51. The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units from other degrees for which credit is maintained or a degree has been conferred.

52. All students, notwithstanding any credit transfer, must complete a major from each of the Faculties of Arts and Science taken at the University of Sydney.

Candidates enrolled before 2005
54.

(1) These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January 2005.
(2) With the permission of the Faculties of Arts and Science, candidates who first enrolled for the degree prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2008 choose to qualify for the degree under the old resolutions.
(3) With the permission of the Faculties of Arts and Science, candidates who first enrolled for the degree as part-time candidates prior to 2005 and have not had a period of suspension or exclusion may until 31 March 2010 choose to qualify for the degree under the old resolutions.

Specific glossary for the BLibStud

Completion of a unit of study means that the assessment requirements have been satisfied and a grade of Pass or better has been achieved.
Junior unit of study is a 1000 or first-year stage unit. Its prerequisites or assumed knowledge are non-tertiary qualifications and corequisites are other Junior units of study.
Intermediate unit of study is a 2000 or second-year stage unit. Its prerequisites or assumed knowledge are Junior or Intermediate units of study and corequisites are other Intermediate units of study. (Specific to the Faculty of Science.)
Senior unit of study is a 3000 or third-year stage unit. Its prerequisites or assumed knowledge are Junior, Intermediate or Senior units of study and corequisites are other Senior units of study. (Specific to the Faculty of Science.)
Honours unit of study is a 4000 or fourth-year stage unit offered within an honours course.
Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.
Major in the Faculty of Arts is normally 36 credit points from Senior units of Study in an Arts subject area, including any units of study specified in the Table of Units of Study as compulsory for that major.
Major in the Faculty of Science normally requires the completion of a minimum of 24 credit points of Senior units of study in one Science area, including any units of study specified in the Table of undergraduate units of study as compulsory for that major. A student may not count a unit of study toward more than one major. (A major in Psychology requires 48 credit points of Intermediate and Senior Psychology units of study including PSYC (2111 or 2011), PSYC (2112 or 2012), PSYC (2113 or 2013) and PSYC (2114 or 2014). No other Intermediate Psychology units can be counted towards the major).
Deans means the Dean of Arts and the Dean of Science.
Faculties means the Faculty of Arts and the Faculty of Science.
Arts subject area means a defined field of study in Arts.
Science subject area means a defined field of study in Science.
Degree means the Bachelor of Liberal Studies.
Requirements means coursework requirements for the award of the degree of Bachelor of Liberal Studies.
Student means a person enrolled as a candidate for the degree of Bachelor of Liberal Studies.
TSP means the Talented Student Program in the Faculty of Science.
WAM means the weighted average mark calculated from the results for all Intermediate and Senior units of study weighted by 2 for 2000 level units and 3 for 3000 and 4000 level units.

Bachelor of Science in Media and Communications

New enrolments in the Bachelor of Media and Communications course will not be possible after 2004. Students who are already enrolled in this course should refer to the resolutions for the degree in the 2004 Science Handbook.

Bachelor of Science and Technology

Resolutions of the Senate and Faculty

Coursework Rule
1. These Resolutions must be read in conjunction with the University of Sydney (Coursework) Rule 2000 (as amended), which sets out the requirements for all coursework courses, and the relevant Resolutions of the Senate.

Admission
2. An applicant may gain admission to the Bachelor of Science and Technology by satisfying requirements as set out below.

(a) School leavers
The NSW Higher School Certificate (HSC), or its interstate or overseas equivalent, at a level determined each year by the Faculty of Science.

(b) Mature age students
Applicants who have attained the age of 21 years by 1st March in the year of intended enrolment may apply for Mature Age Admission. Applicants for Mature Age Admission must present evidence that they have attained a standard of education and experience adequate for entry to the program through an

approved preparation program under the terms set out in the Admissions policy of the University of Sydney.

(c) Other categories of admission

Other applicants may gain admission to the Bachelor of Sciences and Technology under the conditions set out in the Admissions policy of the University of Sydney.

Units of study

3.

(1) The units of study available for the Bachelor of Sciences and Technology are:
- (a) Units of study listed in Table I, Table III and Table VII in the Handbook of the Faculty of Science, excluding all units with INFS codes.
- (b) Units of study listed in Table A in the Handbook of the Faculty of Arts.
- (c) Units of study in Legal Studies Units listed as available for study in the Bachelor of Arts and Sciences offered by the Faculty of Arts.
- (d) Units of study completed at the University of Sydney Summer/Winter School which correspond to units of study specified in (l)(a) and (l)(b) above.

(2) With the permission of the Dean of Science, candidates may count towards the degree a maximum of 36 credit points not specified in Section 4(1) but from within the University.

(3) Full-time students normally take units of study with a total credit point value of 24 credit points per semester for 6 semesters.

Requirements for the Bachelor of Science and Technology

4.

(1) To qualify for the award of the pass degrees a student shall complete 144 credit points comprising:
- (a) a minimum of 12 credit points from the Science subject areas of Mathematics and Statistics;
- (b) a minimum of 12 credit points in Experimental Science units of study from those specified in Table Vila in the Handbook of Faculty of Science;
- (c) a minimum of 12 credit points in Science/Technology associated Humanities and Social Sciences from those specified in Table Vllb in the Handbook of Faculty of Science;
- (d) a minimum of 12 credit points in Technology/Applied Science units of study from those specified in Table VIIc in the Handbook of Faculty of Science;
- (e) a minimum of 72 credit points in senior or intermediate units of study, or in units of study normally taken at second or third year level or higher;
- (f) a major in the Faculty of Science specified in Table I or a major from the list of majors in Table Vile in the Handbook of Faculty of Science. A major in the BST requires a minimum of 36 credit points at 2000 and 3000 level including a minimum of 12 credit points at 3000 level except in the case of a major in a Science area which normally requires the completion of 24 credit points of Senior units of study, in addition to any other units of study specified in the table as compulsory for that major.

(2) Notwithstanding (l)(f) above, where, in exceptional circumstances arising from prerequisites or other restrictions in certain discipline areas, a student is unable to complete the formal requirements of a major in the normal course of the degree but is nevertheless able to demonstrate depth of study in a specified discipline area within a faculty by the completion of a total of 36 intermediate and senior credit points including at least 12 senior credit points in a Faculty of Science, Faculty of Architecture or Faculty of Engineering discipline area, the Dean of Science may, on application from the student and a recommendation from the Head of Department, permit the student to graduate without a major. In such circumstances no major shall be specified on the transcript.

(3) Prerequisites, corequisites, entry requirements and assumed knowledge are set out in the tables of units of study referred to in Section 3.

(4). The testamur for the degree of Bachelor of Sciences and Technology shall specify the major(s) completed.

Requirements for honours degree

5. There shall be honours courses in all Science subject areas listed in Table VI (Honours units of study).

6.

(1) To qualify to enrol in an honours course, students shall:
- (a) have qualified for the award of a pass degree; or
- (b) be a pass graduate of the Faculty of Science; or
- (c) be a pass graduate holding a Bachelor of Science and Technology degree or an equivalent qualification from another institution.

(2) have completed a minimum of 24 credit points of Senior units of study relating to the intended honours course (or equivalent at another institution);

(3) have achieved either:
- (a) a credit average in the relevant Senior Science units of study; or
- (b) a SCIWAM of at least 60 (or equivalent at another institution); and

(4) satisfy any additional criteria set by the Head of Department concerned.

7. Students shall complete the requirements for the honours course full-time over two consecutive semesters.

8. If the Faculty is satisfied that a student is unable to attempt the honours course on a full-time basis and if the Head of Department concerned so recommends, permission may be granted to undertake honours half-time over four consecutive semesters.

9. To qualify for the award of an honours degree, students shall complete 48 credit points of honours units of study in the Table of undergraduate units of study, as prescribed by the Head of Department concerned.

10. The grade of honours and the honours mark are determined by performance in the honours course.

11. A student with an honours mark of 90 or greater in an honours subject area and a minimum SCIWAM of 80 shall, if deemed to be of sufficient merit by the Dean, receive a bronze medal.

12. A student may not re-attempt an honours course in a single subject area.

13. A student who is qualified to enrol in two honours courses may either:

(1) complete the honours courses in the two subject areas separately and in succession; or

(2) complete a joint honours course, equivalent to an honours course in a single subject area, in the two subject areas. A joint honours course shall comprise such parts of the two honours courses as may be decided by the Dean.

Supervision

14.

(1) Students shall be under the supervision of the Faculty of Science.

(2) The Dean of the Faculty of Science shall exercise authority in any matter concerning the degree program not otherwise dealt with in the Resolutions of the Senate or in these resolutions.

Enrolment in more/less than minimum load

15.

(1) A student may not enrol without first obtaining permission from the Dean of Science in additional units of study once the degree requirements of 144 credit points have been satisfied.

(2) A student may not enrol in units of study having a total value of more than 30 credit points in a semester.

(3) Students may enrol on either a full-time or part-time basis.

Cross-institutional study

16. Provided that permission has been obtained in advance, the Dean of Science 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:

(1) the unit of study content is material not taught in any corresponding unit of study in the University; or

(2) the student is unable for good reason to attend a corresponding unit of study at the University.

Restrictions on enrolment
17.
(1) Where a student enrols in a unit of study which is the same as, or has a substantial amount in common with, a unit of study previously attempted but not completed at the grade of pass or better, the Head of School concerned may exempt the student from certain requirements of the unit of study if satisfied that the relevant competence has been demonstrated.
(2) A student may not enrol in a unit of study which they have completed previously with a grade of pass or better.
(3) Units of study which overlap substantially in content are noted in the Table I of units of study for the Bachelor of Science, in Table III for Bachelor of Computer Science & Technology and Bachelor of Information Technology and in the Tables of Undergraduate units of study for the Bachelor of Arts, Bachelor of Engineering and Bachelor of Architecture. Such units of study are mutually exclusive and no more than one of the overlapping units of study may be counted towards meeting the course requirements.

Discontinuation of enrolment
18. A student who does not enrol in any semester without first obtaining written permission from the Dean to suspend candidature will be deemed to have discontinued enrolment in the course. Students who have discontinued from the course will be required to apply for admission to the course and be subject to admission requirements pertaining at that time.

Suspension of candidature
19. A student may seek written permission from the Dean to suspend candidature in the Bachelor of Science and Technology. Suspension may be granted for a maximum period of one year on any one application.

Re-enrolment after an absence
20. A student who intends to re-enrol after a period of suspension must advise the Faculty of Science Office in writing of their intention by no later than the end of October for First semester of the following year or the end of May for Second semester of the same year.

Satisfactory progress
21. If a student fails or discontinues enrolment in one unit of study twice, a warning will be issued that if the unit is failed a third time, the student may be asked to show good cause why he or she should be allowed to re-enrol in that unit of study.

Time limit
22. A student shall be required to complete the Bachelor of Science and Technology within a period of ten years from commencement of enrolment. If a candidate is admitted with credit, the Faculty will determine a reduced time limit for completion of the degree.

Assessment policy
23.
(1) Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the relevant faculties which manage the relevant unit of study may determine.
(2) The performance of students in units of study in the same subject area but of different levels of difficulty will be matched so that a grade obtained in one unit indicates a quality of work comparable with that required for the same grade in the other unit(s).
(3) Heads of School may arrange for further testing in cases of special consideration, in accordance with Academic Board policy governing illness and misadventure.

Credit transfer policy
24.
(1) Credit will not be granted for units of study completed more than nine years prior to application, except with the permission of the Dean of Science.
(2) Credit may be granted as specific credit if the unit of study is considered to be directly equivalent to a unit of study from Table I, Table III or from Table VII or as non-specific credit.
(3) The total amount of credit granted may not be greater than 96 credit points and may not include more than 48 credit points of units from other degrees for which credit is maintained or a degree has been conferred.
(4) All students, notwithstanding any credit transfer, must complete a major at the University of Sydney from the list of majors in Table Vlld in the Handbook of Faculty of Science.

Specific glossary for the BST

Completion of a unit of study means that the assessment requirements have been satisfied and a grade of Pass or better has been achieved.
Junior unit of study is a 1000 or first-year stage unit. Its prerequisites or assumed knowledge are non-tertiary qualifications and corequisites are other Junior units of study.
Intermediate unit of study is a 2000 or second-year stage unit. Its prerequisites or assumed knowledge are Junior or Intermediate units of study and corequisites are other Intermediate units of study. (Specific to the Faculty of Science.)
Senior unit of study is a 3000 or third-year stage unit. Its prerequisites or assumed knowledge are Junior, Intermediate or Senior units of study and corequisites are other Senior units of study. (Specific to the Faculty of Science.)
Honours unit of study is a 4000 or fourth-year stage unit offered within an honours course.
Advanced unit of study is a unit which generally parallels a normal unit of study but which provides added breadth of material and/or sophistication of approach.
Major in the BST normally requires a minimum of 36 credit points at 2000 and 3000 level including a minimum of 12 credit points at 3000 level except in the case of a major in a Science area which normally requires the completion of 24 credit points of Senior units of study, in addition to any other units of study specified in the table as compulsory for that major. A student may not count a unit of study toward more than one major. (A major in Psychology requires 48 credit points of Intermediate and Senior Psychology units of study including PSYC (2111 or 2011), PSYC (2112 or 2012), PSYC (2113 or 2013) and PSYC (2114 or 2014). No other Intermediate Psychology units can be counted towards the major).
Dean means the Dean of Science.
Faculty means the Faculty of Science.
Science subject area means a defined field of study in science.
Degree means the degree of Bachelor of Science and Technology.
Requirements means coursework requirements for the award of the degree of Bachelor of Science or Bachelor of Arts.
Student means a person enrolled as a candidate for the degree of Bachelor of Science and Technology.
SCIWAM means the weighted average mark calculated by the Faculty from the results for all Intermediate and Senior units of study with a weighting of 2 for Intermediate units and 3 for Senior units.

Generic glossary for the BSc, BCST, BIT, BMedSc, BPsych, BLibStud, BST

Unit of study is a standalone component of a course and comprises such lectures, tutorial instruction, essays, exercises and practical work as the Faculty may prescribe.
Prerequisite means a unit of study which must be completed at the grade of pass or better before a student may enrol in any unit of study for which that unit of study has been prescribed as a prerequisite unless waived with the permission of the Head/Chair of Department concerned.
Assumed knowledge is curricular material which is assumed to be known by each student when enrolling in a unit of study.
Corequisite means a unit of study in which, unless previously completed, a student must enrol concurrently with any unit of study for which that unit of study has been prescribed as a corequisite unless waived with the permission of the Head of Department concerned.
Credit is granted in the form of credit points towards the requirements of a course on the basis of previous attainment in another course at a recognised tertiary institution.
Credit may be granted as **specific credit** in recognition of previously completed studies which are directly equivalent to a unit of study at this University or non-specific credit in the form of block credit for a specified number of credit points at a particular level and, where appropriate, in a particular subject area.

Exemption means that a student may be exempted from completing parts of the prescribed work (lectures, seminars, tutorials and practical work) for a unit of study on the basis of previous study. Exemption may be granted for the whole of a unit of study but no advanced standing will be granted.
Cross-listing is the availability of units of study in one subject area for counting towards requirements in other subject areas.
University means the University of Sydney.
Department means department, school, or teaching unit.
Course means a structured academic program of study leading to the award of a degree.
Stream means a form of specialisation in which there is a defined program of study, in terms either of subject areas or depth of study.
Program of study means a recommended or prescribed sequence that forms a course or part of a course, and may consist of compulsory or optional units of study as well as other forms of study.
Combined degrees means concurrent enrolment in two degree courses which compresses the duration of the two degree programs.
Double degrees means completing a second degree while enrolment is suspended from the first degree.
UAC means Universities Admission Centre.
Supervision by a faculty covers all areas of policy and procedure affecting students such as degree rules, enrolment procedures and the Dean to whom reference is to be made at any given time.

6. Postgraduate degree requirements

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

This chapter sets out the requirements for both research and coursework postgraduate degrees offered in the Faculty of Science. Following is a brief description of the research degrees, notes on the presentation of theses and a description of coursework/research degrees. A comprehensive guide to the requirements and units of study of the coursework degrees is listed.

The information in this chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected variously in chapter 7, or in the University of Sydney Calendar. The Calendar is available for sale at the Student Centre, for viewing at the Faculty Office or the Library, or on the Web at www.usyd.edu.au/publications/calendar/

Research degrees

Research degrees offered by the Faculty are listed in this chapter in the following order:

- Doctor of Science
- Doctor of Philosophy
- Master of Science
- Master of Science (Environmental Science).

The resolutions of the Senate, Academic Board and Faculty relating to these degrees may be found in chapter 7 and the Calendar. Additional valuable resources for intending and current research students are the Postgraduate Research Studies Handbook, published by the University of Sydney, the Thesis Guide and the Survival Manual published by SUPRA (Sydney University Postgraduate Representative Association). These publications are available from the Faculty Office. The Postgraduate Research Studies Handbook is also on the Web at www.usyd.edu.au/study/postgrad.shtml.

Doctor of Science (DSc)

The degree of Doctor of Science is awarded for published work which has been generally recognised by scholars in the field concerned as a distinguished contribution to knowledge. To be eligible applicants must be graduates of the University of Sydney. Alternatively they may be graduates of another university or be accepted as having standing equivalent to that required of a graduate of the university and have been either a full-time member of the academic staff of the University of Sydney for at least three years or have had a significant involvement with the teaching or research of the University.

Admission to candidature is subject to a preliminary assessment by the Faculty of the applicants case. If this is favourable an applicant is required to submit a list of published work, together with a description of the theme of the published work. At least three examiners, of whom at least two are external are appointed to assess the application and make recommendations.

Faculty resolutions: see chapter 7.
Resolutions of the Senate: see the University of Sydney Calendar.

Doctor of Philosophy (PhD)

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. The Resolutions of the Senate and Academic Board relating to the degree of Doctor of Philosophy are printed in University of Sydney Calendar.

Applicants should normally hold a masters degree or a bachelors degree with first or second class honours from 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 can, with the permission of the Faculty, be two years for candidates holding an MSc degree or equivalent, or is three years in the case of candidates holding a bachelors degree with first class or second class honours; the maximum period of candidature is normally four years.

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. Normally the minimum period of candidature will be determined on the recommendation of the Faculty but in any case will be not less than three years; the maximum period of part-time candidature is normally eight years.

Doctor of Philosophy Resolutions: see the University of Sydney Calendar.

Master of **Science** (MSc)

Graduates of the University of Sydney with first or second class honours and candidates in the final year of an approved honours course in the BSc degree or who have an equivalent qualification from another institution or an equivalent standard of knowledge, may apply for admission to candidature for the MSc degree. Once admitted, candidates proceed full-time or part-time, by supervised research and thesis, or in some cases by coursework and essay.

An application should be lodged with the Faculty. It must be supported by the Head of the Department concerned and approved by the Faculty. If qualifications have been obtained in another university or institution then an application must also be approved by the Academic Board. If an applicant has the prerequisite qualifications, admission to candidature may be approved provided the necessary staff and facilities are available, including adequate accommodation and any special equipment. Some candidates must satisfy a preliminary examination before being admitted to full candidature.

Full-time candidates
Minimum period of candidature: 1 year
Maximum period of candidature: 2 years

Part-time candidates
Minimum period of candidature: 1 year
Maximum period of candidature: 4 years

Master of Science Resolutions: see chapter 7.

Master of Science (Environmental Science)

The MSc (Environmental Science) is a research degree requiring a minimum of three semesters of full-time study (or equivalent part-time study). This degree is designed to extend the students knowledge base in environmental matters by providing the student with further training and research experience.

Candidates are required to show proof of a breadth of knowledge in environmental issues, as determined by the Director of Environmental Science. Consequently, as well as the submission of a research thesis, candidates may be required to satisfactorily complete up to a maximum of 24 credit points of coursework study. Prior to the beginning of studies, students must discuss their enrolment details and candidature with the Director of Environmental Science and agree a program guaranteeing breadth of study and ensuring that all units of coursework cover material new to the student. Such details may only be approved or modified by the Director.

Graduates of the University of Sydney with first or second class honours, or who have completed a Graduate Diploma in Applied Science (with or without an emphasis in Environmental Science) with a grade of credit or above, or who have an equivalent qualification from another institution or an equivalent standard of knowledge, may apply for admission to candidature for the Master of Science (Environmental Science) degree.

An application should be lodged with the Faculty of Science and must include a project proposal and the signature(s) of the prospective supervisor(s). It should also be supported by the Director of Environmental Science. If an applicant has the prerequisite qualifications, admission to candidature may be approved if the necessary staff and facilities are available, including adequate accommodation and any special equipment. Some candidates may need to satisfy a preliminary examination before being admitted to full candidature.

Master of Science (Environmental Science) Resolutions:
see chapter 7.

Presentation of theses

The following information is presented for the guidance of candidates. It should be regarded as a summary only. Candidates should also consult the Universitys Calendar, the Postgraduate Research Studies Handbook and the Faculty of Science for the most current and detailed advice. The Postgraduate Research Studies Handbook is available on the Web at www.usyd.edu.au/ su/ab/committees/committees.html.

Formal requirements

Number of copies to be submitted:
Doctor of Philosophy 4
Master of Science 3

The four copies of theses submitted for examination for the degree of Doctor of Philosophy may be bound in either a temporary or a permanent form. Theses submitted in temporary binding should be strong enough to withstand ordinary handling and postage.

The degree shall not be awarded until the candidate has submitted a permanently bound copy of the thesis (containing any corrections or amendments that may be required) and printed on acid-free or permanent paper.

The thesis shall be accompanied by a certificate from the supervisor stating whether in the supervisors opinion the form of presentation of the thesis is satisfactory.

Theses in permanent form shall normally be on International Standard A4 size paper sewn and bound in boards covered with bookcloth or buckram or other binding fabric. The title of the thesis, the candidates initials and surname, the title of the degree, the year of submission and the name of the University of Sydney should appear in lettering on the front cover or on the title page. The lettering on the spine, reading from top to bottom, should conform as far as possible to the above except that the name of the University of Sydney may be omitted and the thesis title abbreviated. Supporting material should be bound in the back of the thesis as an appendix or in a separate sheet of covers.

Similar formal requirements exist for the presentation of MSc theses.

Additional information

At the request of the Academic Board, the Science Faculty has resolved that a thesis should not normally exceed 80,000 words. With the permission of the Chair of the Faculty of Sciences Post-graduate Studies Committee, a thesis may have an absolute upper limit of 100,000 words.

Amendments do not have to involve rekeying if a black ink/biro amendment is clear. Amendments can also be made by way of an appendix to the thesis.

Candidates are advised to consult the SUPRA publication, Practical Aspects of Producing a Thesis at the University of Sydney, for other guidelines and suggestions in addition to the formal requirements above.

Summary

Within the Faculty of Science, there are no formal requirements/ guidelines other than those listed above. There are no requirements for single/double spacing or single/doubled sided presentation, nor point size, figure presentation, format of bibliographic citations, etc. Candidates should however, be aware that, if the degree is awarded, the thesis becomes a public document, the quality of which reflects on the ability of the candidate. Moreover, utilising a format that will make the examiners tasks easier is obviously sensible.

Coursework/research degrees

Doctor of Clinical Psychology/Master of Science

The School of Psychology offers one degree which trains psychology graduates in the professional specialisation of clinical psychology: the Doctor of Clinical Psychology/Master of Science degree.

The degree is recognised, in principle, by the New South Wales Department of Health as qualifying the holder for progression to the grade of Clinical Psychologist. The course is accredited by the Australian Psychological Society as a 5th and 6th year of training, and as an approved qualification for Associate Membership of the APS College of Clinical Psychologists. The NSW Psychologists Registration Board also accredits the course for the purposes of registration.

Combined Doctor of Clinical Psychology/Master of Science degree (Minimum duration 3 years)
The Doctor of Clinical Psychology (DCP) involves 3 years of full-time study and includes three components: academic course work, supervised clinical internships and research.

The academic coursework involves lectures, workshops, forums and seminars by the University academic staff. Qualified Clinical Psychologists who work in a variety of teaching hospitals and clinics in the Sydney area provide supervised clinical practice. In some circumstances, Internships may also be available in rural and remote areas including Bathurst, Bourke and Lismore. The research component requires students to produce, by the second semester of their third year, a Research Thesis that incorporates 1 or 2 journal publications and a comprehensive literature review.

All students enrol in the DCP degree and in their second year enrol in a MSc degree as well. On completion of all the course requirements at the end of the third year, students will graduate with a DCP/MSc degree.

Students who have made excellent progress and whose projects are of sufficient scope may then apply for transfer to a PhD degree. Transfer to a PhD is also subject to the satisfactory production of a thesis proposal which on completion, will make a contribution to knowledge in a specialist area of study.

Admission requirements
Admission to the degree is available to graduates who meet the following requirements:

* Completion of a four year honours degree in Psychology, gaining at least an upper second class (2.1) Honours, or its equivalent eg. (BPsych, BA(Hons), BSc(Hons), BEc(SocSci)(Hons) or BLibStudies(Hons), GradDipSc(Psych)(Pass with Merit), in Psychology).

* Completion of an individually conducted research project and thesis within the degree.

* Completion of clinically relevant work experience (relevant paid, voluntary or research work).

* Satisfactory referee reports (academic referee, clinical work experience referee).

* Successful selection interview.

Clinical relevance for application
Students applying for the DCP are not required to have completed an empirical research project in the area of Abnormal or Clinical Psychology. The selection process aims to identify students with a demonstrated interest in abnormal or clinical psychology, an awareness of clinical issues, and experience related to the area. This can be demonstrated in a number of ways, for example relevant work experience or a relevant empirical project. Note also that clinical relevance can be discussed on the basis of projects in many areas of Psychology, for example cognitive psychology, developmental psychology, individual differences, human learning, neuroscience, social psychology.

Selection
* Evaluation of submitted application forms and supporting documentation (including demonstrated relevant work experience and satisfactory referees reports).

* Evaluation of selection interview (assesses relevant academic, research and work experience and performance, aptitude for clinical psychology and awareness of ethical issues relevant to clinical practice).

* Applicants who meet the minimum admission requirements are then ranked according to academic record (class of Honours degree, or equivalent, obtained) and performance in the selection interview.

* Offers of places are dependent upon the ranking of applicants and competition for places.

Application submission
Applications are to be sent to the Postgraduate Manager, Faculty of Science, Carslaw Building (F07), University of Sydney NSW 2006. International applicants should apply in writing to the International Office, Services Building (G12), University of Sydney NSW 2006, Australia.

Conditional Registration
All intending candidates are required to obtain provisional registration with the NSW Psychologists Registration Board immediately after commencing their candidature, or if applicable, full registration.

Level 2, 28 Foveaux Street, Surry Hills 2010; Phone 02 9219 0211; Fax 02 9281 2030.

Course structure
This program is based on a scientist-practitioner model with a cognitive-behavioural emphasis. It aims to provide students with a high level of expertise in practical, academic and research areas which will enable them to work successfully as professional clinical psychologists in a variety of academic, clinical and community settings. Our graduates will have a highly developed knowledge base and strong clinical skills necessary for both the practice of professional psychology on the one hand and conducting psychological research on the other.

Course resolutions
See Chapter 7.

Unit of study		CP
Year 1, Semester 1		
PSYC 6002	Psychological Assessment of Adults	6
PSYC 6003	Clinical Internship 1	3
PSYC 6004	Ethics and Professional Practice	3
PSYC 6005	Research 1	3
PSYC 6029	Case Seminars 1	3
PSYC 6051	Adult Psychological Disorders	6
Year 1, Semester 2		
PSYC 6007	Psychological Assessment of Children	6
PSYC 6008	Clinical Internship 2	3
PSYC 6009	Case Seminars 2	3
PSYC 6010	Research 2	3
PSYC 6049	Child Psychological Disorders	6
PSYC 6053	Developmental Disorders	3
Year 2, Semester 1		
PSYC 6013	Clinical Internship 3	3

PSYC 6014	Case Seminars 3	3
PSYC 6015	Research 3	3
PSYC 6032	Adult Health Psychology	6
PSYC 6054	Adult Neuropsychopathology	3
PSYC 6055	Advanced Adult Psychological Disorders	6
Year 2, Semester 2		
PSYC 6018	Clinical Internship 4	3
PSYC 6031	Family Therapy	3
PSYC 6056	Advanced Seminars	6
PSYC 6062	Case Seminars 4	0
Year 3, Semester 1		
PSYC 6061	Clinical Internship and Case Seminars 5	0
Year 3, Semester 2		
PSYC 6058	Clinical Internship and Case Seminars 6	0

PSYC 6002 **Psychological Assessment of Adults**
6 credit points. D C N, D C P, Ph D (Science). Dr David Horry. **Session:** Semester 1.
This unit of study introduces students to the basic theory and the general practice of psychological testing with adult populations, focusing on neuropsychological assessment. The unit will focus on the components of cognition including intelligence, perception, memory, attention, executive abilities and language. Students will be taught how to administer, score and interpret a variety of tests in these areas; and how to report the results in written form.

PSYC 6003 **Clinical Internship 1**
3 credit points. D C P, Ph D (Science). Dr Louise Sharpe. **Session:** Semester 1.
This unit of study is designed to introduce students to the work of clinical psychologists. The internship will expose students to a range of clients with different mental health needs, both in the Psychology Clinic and in hospital settings. The internship will strengthen theory-practice links, by exposing students to the range of mental health problems faced in clinical settings. In addition, core clinical skills will be developed. Skills in micro-counselling and cognitive-behavioural interviewing are reviewed and practiced. Diagnostic assessment, mental status examination and cognitive behavioural case formulation are taught with a view to developing individual treatment plans.

PSYC 6004 **Ethics and Professional Practice**
3 credit points. D C N, D C P, Ph D (Science). Prof Stephen Touyz. **Session:** Semester 1.
This unit of study will introduce students to the highest standards of ethical and clinical practice and familiarise them with relevant legislation pertaining to contemporary practice in clinical psychology.

PSYC 6005 **Research 1**
3 credit points. D C N, D C P, Ph D (Science). Dr Louise Sharpe. **Session:** Semester 1.
This unit of study provides an introduction to issues in psychological research. Students will also attend a weekly research forum in the Clinical Psychology Unit and the School Colloquium in fulfillment of requirements for this unit of study.

PSYC 6007 **Psychological Assessment of Children**
6 credit points. D C N, D C P, Ph D (Science). Dr Suncica Sunny Lah. **Session:** Semester 2. **Prerequisites:** PSYC6002.
This unit of study introduces students to the instruments and clinical decision-making process used when assessing children of different ages, levels of abilities and clinical presentations. Students will be familiarized with normal developmental stages, developmental disorders and the systemic/developmental approach to assessment in which tests are used as tools to address hypotheses arising from referring documents, interviews and clinical observation. Different developmental, cognitive and behavioural assessment methods will be discussed and students will be taught how to administer, score, interpret and report results taking into consideration the child's living environment and developmental level.

PSYC 6008 **Clinical Internship 2**
3 credit points. D C P, Ph D (Science). Dr Louise Sharpe. **Session:** Semester 2. **Prerequisites:** PSYC 6003, PSYC6051, PSYC6002.
This unit of study is designed to introduce students to therapy and psychological assessment skills for working specifically with adults. Students will be allocated to a supervisor who will oversee their clinical practice closely. This internship will expose students to clients with psychological problems in mild to moderate clinical range. The internship builds student's confidence in working with clients of adult ages. It will allow students to develop skills in the identification of clinical problem, the communication of a formulation and treatment plan and the conduct of the plan.

PSYC 6009 **Case Seminars 2**
3 credit points. D C P, Ph D (Science). Prof Stephen Touyz. **Session:** Semester 2. **Prerequisites:** PSYC 6029.
This unit of study will continue the seminars introduced in PS YC6029 Case Seminars 1. This unit of study will comprise formal weekly presentations of cases seen in the course of Clinical Internships by Year 3 students. All students are required to attend throughout the semester.

PSYC 6010 **Research 2**
3 credit points. D C N, D C P, Ph D (Science). Dr Louise Sharpe. **Session:** Semester 2. **Prerequisites:** PSYC6005.
Within this Unit of Study students will consolidate their research plan and develop a written proposal for their research project. The Research Forum will also feature the presentation of special topics including research design, statistics and power considerations. Students will also be guided through the process of submitting an Application for Ethical Approval. Students will be expected to attend the School of Psychology Colloquium.

PSYC 6013 **Clinical Internship 3**
3 credit points. D C P, Ph D (Science). Dr Louise Sharpe. **Session:** Semester 1. **Prerequisites:** PSYC6008, PSYC6007, PSYC6049.
This unit of study is designed to introduce students to therapy and psychological assessment skills for working specifically with young people and their families. Students will be allocated to a supervisor who will oversee their clinical practice closely. This internship will expose students to clients with psychological problems in mild to moderate clinical range. The internship builds student's confidence in working with young clients of school age. In addition, this unit will allow students to build on their previous work with adults. Specifically, students will continue to work half a day per week with adult clients in the internal clinic. Interns will be able to work more independently at this stage of their training.

PSYC 6014 **Case Seminars 3**
3 credit points. D C P, Ph D (Science). Prof Stephen Touyz. **Session:** Semester 1. **Prerequisites:** PSYC 6009.
This unit of study builds upon previous semesters where second year students will present a clinical case for discussion. Assessment of this unit of study is by detailed case reports.

PSYC 6015 **Research 3**
3 credit points. D C N, D C P, Ph D (Science). Dr Louise Sharpe. **Session:** Semester 1. **Prerequisites:** PSYC 6010.
Students will attend the Research Forum and will present the rationale, aims, hypotheses, and plan of their proposed research project to the group, which will include staff of the CPU and School of Psychology. Students will attend the School Colloquium in fulfilment of requirements for this unit of study.

PSYC 6018 **Clinical Internship 4**
3 credit points. D C P, Ph D (Science). Prof Stephen Touyz. **Session:** Semester 2. **Prerequisites:** PSYC 6013.
Students are introduced to a range of experiences in hospitals and community settings in accordance with their clinical and research interests. One of the three internships will be specifically tied to the student's research project to allow them to specifically develop skills relevant to research with that particular clinical population. One of the three internships should also be with a client group with general, psychiatric problems. The specific nature of learning outcomes will depend upon the setting for the internship, the client group and the nature of the clinical work. Choices for internships will be made in collaboration with the unit coordinator, who will work with students to develop individually tailored training plans.

PSYC 6029 **Case Seminars 1**
3 credit points. D C P, Ph D (Science). Prof Stephen Touyz. **Session:** Semester 1.
Attendance at the case seminars introduces students to history taking, conducting a mental status examination, formulation, diagnosis and treatment. These clinical case conferences will allow students to recognise a wide range of psychiatric diagnoses, the interrelationships

between medical illness and psychiatric/psychological symptomatology as well as working within a multidisciplinary framework.

PSYC 6031 **Family Therapy**
3 credit points. D C N, D C P, Ph D (Science). Dr Caroline Hunt. **Session:** Semester 2. **Prerequisites:** PSYC6049.
This course introduces students to issues that may be a focus of clinical attention during childhood but are not defined as mental disorders such as relationship problems in the family system, parenting capacity, and problems related to abuse and/or neglect. Students will be introduced to family therapy as an approach to treating such problems.

PSYC 6032 **Adult Health Psychology**
6 credit points. D C N, D C P, Ph D (Science). Dr Louise Sharpe. **Session:** Semester 1. **Prerequisites:** PSYC6051.
This course aims to understand the relationships between psychological and physical functioning across a wide range of medical disorders, including their effect on cognitive function, and the way in which cognitive and behavioural factors influence psychological and physical functioning of those with health related problems. A variety of medical problems will be studied in relation to their impact on function, as well as issues such as preventative medicine (eg. HIV), adjusting to and living with chronic illness (eg. chronic pain), issues relating to terminal illness (eg. psychooncology) and issues relating to compliance (eg. diabetes). The course will be concerned with theories and interventions that promote health related behaviours and improve quality of life for people with medical problems.

PSYC 6049 **Child Psychological Disorders**
6 credit points. D C P, Ph D (Science). Dr Caroline Hunt. **Session:** Semester 2. **Prerequisites:** PSYC 6051.
This course introduces the nature, assessment and treatment of psychological disorders in children and adolescents. Students will examine the diagnostic classification, epidemiology, aetiology, developmental course, context and outcomes of common psychological problems evidenced in childhood and adolescence (e.g., anxiety, depression, conduct disorders, ODD, ADHD, eating problems, OCD). Prevention issues will also be addressed. Cognitive and behavioural intervention strategies will be discussed along with a number of other conceptual and practical issues in child clinical psychology. Skills training will include interviewing, measurement tools and application of interventions.

PSYC 6051 **Adult Psychological Disorders**
6 credit points. D C N, D C P. Dr Caroline Hunt. **Session:** Semester 1.
This unit of study is designed to introduce students to the nature of therapeutic work with common psychological problems of adulthood, through a series of lectures and practical skills based sessions. Strategies for cognitive behavioural interviewing within a diagnostic framework (DSMIV) are reviewed and practiced. Emphasis is placed upon the learning of strong practical skills in the application of evidence-based therapies to the common psychological disorders encountered in adulthood, such as anxiety disorders, mood disorders and eating disorders.

PSYC 6053 **Developmental Disorders**
3 credit points. D C N, D C P. Dr Suncica Sunny Lah. **Session:** Semester 2.
This unit of study will focus on developmental disorders that occur in childhood (ie. developmental language disorder, cerebral palsy, dyslexia, autism, to mention some of them). The aim of this course is for students to develop core theoretical knowledge and understanding of developmental disorders that they are likely to encounter in their clinical work with children.

PSYC 6054 **Adult Neuropsychopathology**
3 credit points. D C N, D C P. Dr Diana Caine. **Session:** Semester 1.
This course introduces students to the cognitive correlates of a range of neurological and medical conditions including cerebral anoxia, diabetes, HIV/AIDS, multiple sclerosis, etc. Students will be able to recognise the cognitive profiles associated with a variety of neurological and medical conditions; understand the neurological basis for these profiles; know how to assess patients with these disorders.

PSYC 6055 **Advanced Adult Psychological Disorders**
6 credit points. D C P. Dr Caroline Hunt. **Session:** Semester 1. **Prerequisites:** PSYC6051.
This course is designed to introduce interns to the nature of therapeutic work with more complex psychological disorders. The course will include mental health problems such as schizophrenia, bipolar disorder, drug and alcohol problems, and personality disorders. The course will also introduce students to clinical psychology work in specialist contexts: working with clients from different cultural backgrounds, clients in forensic settings, and older adults.

PSYC 6056 **Advanced Seminars**
6 credit points. D C P. Dr Caroline Hunt. **Session:** Semester 2. **Prerequisites:** PSYC6051.
This course is designed to provide interns with advanced level training in psychotherapeutic approaches. The advanced level seminars will include Schema Therapy, Integrated Approaches to Psychotherapy and may include from time to time, seminars by visiting clinical academics with expertise in specific therapeutic approaches.

PSYC 6058 **Clinical Internship and Case Seminars 6**
0 credit points. D C P. Prof Stephen Touyz. **Session:** Semester 2.
This course provides students with a range of therapy and assessment experiences in accordance with their clinical and research interests. The specific nature of learning outcomes will depend upon the setting for the internship, the client group and the nature of the clinical work. Students will also attend the clinical case seminars and present for discussion complex clinical cases which pose either diagnostic dilemmas or difficulties in treatment.

PSYC 6061 **Clinical Internship and Case Seminars 5**
0 credit points. D C P. Prof Stephen Touyz. **Session:** Semester 1.
This course provides students with a range of therapy and assessment experiences in accordance with their clinical and research interests. The specific nature of learning outcomes will depend upon the setting for the internship, the client group and the nature of the clinical work. Students will also attend the clinical case seminars and present complex clinical cases for discussion which pose either diagnostic dilemmas or difficulties in treatment.

PSYC 6062 **Case Seminars 4**
0 credit points. D C P. Prof Stephen Touyz. **Session:** Semester 2.
This unit of study builds upon previous semesters where second year students will present a clinical case for discussion. Assessment of this unit of study is by detailed case reports.

Doctor of Clinical Neuropsychology/Master of Science

The School of Psychology offers one degree which trains psychology graduates in the professional specialisation of clinical neuropsychology: the Doctor of Clinical Neuropsychology/Master of Science degree.
The degree is likely to be recognised, in principle, by the New South Wales Department of Health as qualifying the holder for progression to the grade of Clinical Psychologist. The course complies with the requirements of the Australian Psychological Society's College of Clinical Neuropsychologists and those of the NSW Psychologists Registration Board. The School of Psychology will be seeking formal accreditation from the Australian Psychological Society and the NSW Psychologists Registration Board in 2004.
Doctorate in Clinical Neuropsychology/Master of Science Degree (Duration 3 years)
The Doctor of Clinical Neuropsychology (DCN) involves 3 years of full-time study and includes three components: academic course work, supervised clinical internships and research.
The academic coursework involves lectures, workshops, forums and seminars by the University academic staff. Qualified Clinical Neuropsychologists from Royal Prince Alfred Hospital, Westmead and Concord Repatriation General Hospitals, and from the new Children's and Sydney Children's Hospitals, will provide supervised clinical practice. The research component requires students to produce, by the second semester of their third year, a Research Thesis that incorporates 1 or 2 journal publications and a comprehensive literature review.
All students enrol in the DCN degree and in their second year enrol in a MSc degree as well. On completion of all the course requirements at the end of the third year, students will graduate with a DCN/MSc degree.
Students who have made excellent progress and whose projects are of sufficient scope may then apply for transfer to a PhD degree. Transfer to a PhD is also subject to the satisfactory production of a thesis proposal which, on completion, will make a contribution to knowledge in a specialist area of study.

Admission requirements

* Completion of a four year honours degree in Psychology, gaining at least an upper second class (2.1) Honours, or its equivalent eg.(BPsych, BA(Hons), BSc(Hons), BEc(SocSci) (Hons) or BLibStud-ies(Hons), GradDipSc(Psych) (Pass with Merit), in Psychology);

* Completion of an individually conducted research project and thesis within the degree;
* Completion of relevant work experience (relevant paid, voluntary or research work);
* Satisfactory referee reports (academic referee, clinical work experience referee).

Clinical relevance for application

Students applying for the DCN are not required to have completed an empirical research project in the area of Abnormal or Clinical Neuropsychology. The selection process aims to identify students with a demonstrated interest in abnormal, or clinical neuropsychology, an awareness of clinical issues, and experience related to the area. This can be demonstrated in a number of ways, for example relevant work experience or a relevant empirical project. Note also that clinical relevance can be discussed on the basis of projects in many areas of Psychology, for example cognitive psychology, developmental psychology, individual differences, human learning, neuroscience, social psychology.

Selection

* Evaluation of submitted application forms and supporting documentation (including demonstrated relevant work experience and satisfactory referees reports).
* Evaluation of selection interview (assesses relevant academic, research and work experience and performance, aptitude for clinical neuropsychology and awareness of ethical issues relevant to clinical practice).
* Applicants who meet the minimum admission requirements are then ranked according to academic record (class of Honours degree, or equivalent, obtained) and performance in the selection interview.
* Offers of places are dependent upon the ranking of applicants and competition for places.

Application submission

Applications are to be sent to the Postgraduate Manager, Faculty of Science, Carslaw Building (F07), University of Sydney NSW 2006. International applicants should apply in writing to the International Office, Services Building (G12), University of Sydney NSW 2006, Australia.

Conditional Registration

All intending candidates are required to obtain provisional registration with the NSW Psychologists Registration Board immediately after commencing their candidature, or if applicable, full registration. Level 2, 28 Foveaux Street, Surry Hills 2010; Phone 02 9219 0211; Fax 02 9281 2030.

Course structure

The programme is based on a scientist-practitioner model. It aims to provide students with a high level of expertise in practical, academic and research areas that will enable them to work successfully as professional clinical neuropsychologists in a variety of academic, clinical and community settings.

Our graduates will have a highly developed knowledge base and strong clinical skills necessary for both the practice of professional Neuropsychology on the one hand and for conducting Neuropsychological research on the other.

Course resolutions

See Chapter 7.

Coursework degrees in Science

Graduate Diploma in Science

Graduates of the University of Sydney who are holders of a Bachelor of Science, Bachelor of Computer Science and Technology, Bachelor of Liberal Studies, Bachelor of Medical Science or Bachelor of Psychology, or graduates from other universities with an equivalent degree, may apply for admission to candidature for the degree Graduate Diploma in Science.

The Graduate Diploma in Science serves as an entry qualification for the degrees of Master of Science or Doctor of Philosophy. It consists of equivalent work to that carried out by candidates enrolled in the fourth year honours courses, and is normally available to candidates who may not be eligible to enrol in those courses. The normal duration of the degree is one year full time or two years part time.

Intending students should consult the table of honours units of study at the end of chapter 3 for the range of disciplines offered. After discussion of your interests with a relevant member of academic staff, an application should be lodged with the Faculty of Science. Entry to the Graduate Diploma is subject to approval by the relevant head of department, the Faculty, and confirmation that requirements for the award of a relevant bachelor's degree have been met.

Environmental Science and Law

Master of Environmental Science and Law

Further information can be found on the Environmental Science website: www.usyd.edu.au/envsci.

Course Overview
The Master of Environmental Science and Law program is a novel concept of undertaking dual courses in the fields of both Science and Law. The program is unique and is not available elsewhere. It provides science graduates with the opportunity of extending their scientific knowledge into the area of the environment, as well as acquiring new skills in the field of environmental law. For law graduates, the opportunity is to extend their knowledge into environmental aspects of law, as well as to gain an understanding of some of the concepts underpinning environmental science.

Course Outcomes
Upon completion of the Master of Environmental Science and Law graduates will possess a practical and theoretical background in aspects of Environmental Science and Environmental Law. This knowledge includes research and practical skills in these areas. The program is designed to integrate disciplines which are normally considered separately and which would be difficult to study outside of the Masters in Environmental Science and Law program.

Admission Requirements
Applicants for the Masters program should hold a Bachelors degree appropriate for the field of study, or be graduates with subsequent experience which is considered to demonstrate the knowledge and aptitude required to undertake the course.

Course Requirements
To qualify for the award of the Master of Environmental Science and Law candidates must complete 48 credit points of units of study approved for the relevant field of study, 24 credit points from the Faculty of Science and 24 credit points from the Faculty of Law. The unit of study LAWS 6044 is compulsory for all students. The unit LAWS 6252 is compulsory for students without a legal qualification.

Course Resolutions: see chapter 7.

Units of study
The table lists the units of study available with this degree. Other units are possible with the permission of the Director of Environmental Science. For LAWS units descriptions, see below. For other descriptions please see the entries in this chapter under Applied Science (Environmental Science).

Unit of study	
Unless otherwise indicated, all units are worth 6 credit points	
Core units	
LAWS 6252	Legal Reasoning & Common Law System
LAWS 6044	Environmental Law and Policy
*Science Units (* = recommended)*	
ENVI 5501	Environmental Research Project (12cp)
ENVI 5705*	Ecological Principles for Environmental Scientists
ENVI 5707	Energy - Sources, Uses and Alternatives
ENVI 5708*	Introduction to Environmental Chemistry
ENVI 5808*	Applied Ecology for Environmental Scientists
ENVI 5809	Computer Modelling & Resource Management
GEOG 5001	Geographic Information Science A
GEOG 5002	Geographic Information Science B
MARS 5001	Coastal Processes and Systems
MARS 5002	Coastal Zone Management
MARS 5003	Beach Management
WILD 5001	Australasian Wildlife: Introduction
WILD 5002	Australasian Wildlife: Field Studies
Law units (# = offered even); second year)	
LAWS 6043	Environmental Assessment Law
LAWS 6045	Environmental Planning Law
LAWS 6061	International Environmental Law
LAWS 6082#	Pollution Law
LAWS 6165	Biodiversity Law
LAWS 6191#	Water Law
LAWS 6257	Public Policy

Note: Law units of study are taught in intensive mode. Contact the Faculty of Law.

LAWS 6044 **Environmental Law and Policy**
6 credit points. Grad Dip Env Law, Grad Dip Post Law, LL M, M Env Law, M Envi Sci Law, S J D. Dr Gerry Bates. **Session:** S2 Intensive, SI Late Int. **Prerequisites:** LAWS6252 Legal Reasoning and the Common Law System (non-law graduates only). **Assessment:** two 4000 wd essays (50% each).
NB: compulsory for all environmental law candidates and pre-requisite for other law units
The aim of the unit is to introduce candidates to overarching themes in environmental law and policy as a foundation to their more detailed studies for the degree of Master of Environmental Law or Graduate Diploma in Environmental Law.
This is an overview unit addressing a number of environmental issues at various levels of analysis; such as policy making, implementation of policy and dispute resolution. The unit covers the law and policy relating to environmental planning, environmental impact assessment, pollution and heritage. The concept of ecologically sustainable development and its implications for environmental law and policy is a continuing theme.
The unit is designed to develop multi-dimensional thinking about environmental issues and the strategies needed to address them. The unit provides a broad background of the political and economic issues in so far as they are related to the legal issues involved.

LAWS 6045 **Environmental Planning Law**
6 credit points. Grad Dip Env Law, Grad Dip Post Law, LL M, M Env Law, M Envi Sci Law, S J D. Ms Nicola Franklin. **Session:** SI Late Int. **Prerequisites:** LAWS6252 Legal Reasoning and the Common Law System; LAWS6044 Environmental Law & Policy (MEL, GradDipEnvL, MenvSciLaw candidates). **Assessment:** one 4000wd essay (50%) and one problem-based 4000wd assignment (50%).
This unit examines the legal and institutional structures in New South Wales for land-use regulation and the resolution of land-use conflicts. The focus is on environmental planning, development control and environmental impact assessment under the Environmental Planning and Assessment Act 1979 (NSW) and cognate legislation. The unit

provides an opportunity to explore contemporary urban issues, such as urban consolidation and infrastructure funding. Federal interest in the cities is also examined.
While an important aim of the unit is to provide students with an understanding of the New South Wales environmental planning system, the unit also aims to develop the capacity to evaluate environmental policies and programs through exploring theoretical perspectives on the function of environmental planning. The unit will critically evaluate the function and design of environmental planning systems and the legal ambit of planning discretion. Significant influences, such as escalating environmental and social concerns about our cities, will be discussed, together with an evaluation of processes and forums for public involvement in land-use policy and decision making.
A good grounding in this area will be of assistance to candidates undertaking other units in the degree of Master of Environmental Law or the Graduate Diploma of Environmental Law.

LAWS 6061 **International Environmental Law**

6 credit points. Grad Dip Env Law, Grad Dip IL, Grad Dip Int Bus L, Grad Dip Post Law, LL M, M B L, M Env Law, M Envi Sci Law, M IL, S J D. Professor Ben Boer. **Session:** S2 Late Int. **Prerequisites:** LAWS6252 Legal Reasoning and the Common Law System; LAWS6044 Environmental Law & Policy (MEL, GradDipEnvL, MenvSciLaw candidates). **Corequisites:** LAWS6167 International Law & Australian Institutions; LAWS6243 Public International Law (MIL, GradDipIL candidates). **Assessment:** one problem based 2500wd assignment (30%) and one 5500wd essay (70%).
This unit aims to provide candidates with an overview of the development of international environmental law throughout the twentieth century. Attention will primarily be devoted to the international law and policy responses to global and regional environmental and resource management issues. Basic principles will be discussed prior to taking a sectoral approach in looking at the application of international environmental law in specific issue areas. The unit includes material on implementation of international environmental law in the Asia Pacific region. Relevant Australian laws and initiatives will be referred to from time to time. The focus is on law and policy that has been applied to deal with environmental problems in an international and transboundary context.

LAWS 6082 **Pollution Law**

6 credit points. Grad Dip Env Law, Grad Dip Post Law, Grad Dip Pub H L, LL M, M Env Law, M Envi Sci Law, S J D. Ms Nicola Franklin (Convenor), Dr Gerry Bates. **Session:** S2 Late Int. **Prerequisites:** LAWS6252 Legal Reasoning and the Common Law System for all non-law graduates; LAWS6044 Environmental Law & Policy (MEL, GradDipEnvL, MenvSciLaw candidates). **Assessment:** one problem based 4000wd assignment (50%) and one 4000wd essay (50%).
This unit examines approaches to pollution prevention and control, with particular emphasis on regulation and enforcement. Compliance, deterrence and incentive strategies are evaluated, as is corporate environmental responsibility and accountability. The unit includes a study of environmental standards, permitting and land-use controls, administrative and civil enforcement, prosecution discretion and criminal and civil liability. Overarching themes are precaution and prevention, integrated pollution control, and community right to know and participate.
The legislative and administrative framework that is studied is that of New South Wales, although comparisons are made with other jurisdictions. The federal dimension, including implementation of the Inter-governmental Agreement on the Environment, in particular Schedule 4, is discussed.

LAWS 6165 **Biodiversity Law**

6 credit points. Grad Dip Env Law, Grad Dip Post Law, LL M, M Env Law, M Envi Sci Law, S J D. Mr Brian Preston SC. **Session:** S2 Late Int. **Prerequisites:** LAWS6252 Legal Reasoning and the Common Law System; LAWS6044 Environmental Law & Policy (MEL, GradDipEnvL, MenvSciLaw candidates). **Assessment:** one 8000wd research paper (100%).
The unit takes an interdisciplinary approach to the conservation of biodiversity. Key concepts in ecology are explained to provide a foundation for the legal framework. This framework is examined at international, national, and state levels, in terms of conventions and legislation, as well as policy and organisations.
The legal framework is explored both by analysing the proper purpose, scope and effect of the laws, as well as how they work in practice. The latter is achieved by lectures and field exercises assisted by officers of government agencies, including State Forests, the National Parks and Wildlife Service and the Department of Infrastructure, Planning and Natural Resources.
An integral component of the unit is a field trip to areas of relevance to biodiversity conservation, focusing on northern New South Wales. Areas to be studied include habitats of threatened species and ecological communities and World Heritage areas listed under the relevant Commonwealth and State legislation. Field studies provide a unique opportunity to understand how principles of international and domestic law are implemented locally.
The field trip component will be arranged in conjunction with the field trip for LAWS605 5 Heritage Law. Candidates are encouraged to take both units of study; they are designed to complement each other closely.
Textbooks
A book of reading materials and a field trip manual will be prepared and distributed.

LAWS 6191 **Water Law**

6 credit points. Grad Dip Env Law, Grad Dip Post Law, LL M, M Env Law, M Envi Sci Law, S J D. Ms Rosemary Lyster. **Session:** S2 Late Int. **Prerequisites:** LAWS6252 Legal Reasoning and the Common Law System; LAWS6044 Environmental Law & Policy (MEL, GradDipEnvL, MenvSciLaw candidates). **Assessment:** one 7000wd essay (80%) and class participation (20%).
This unit examines the ecologically sustainable management of water resources incorporating legal, scientific and economic perspectives. The legal analysis incorporates the following: international principles of water law; Commonwealth and state responsibilities for water management; the Water Management Act 2000 (NSW); the legal and constitutional implications of the reallocation of rights to use water; the implications of allocation and use for Indigenous people; the regulation of water pollution; and the corporatisation and privatisation of water utilities. Case studies from a number of jurisdictions are used to explore these themes. Economic perspectives include the impact of National Competition Policy on water law while the principles of sustainable water management are discussed within a scientific paradigm.

LAWS 6252 **Legal Reasoning & the Common Law System**

6 credit points. Grad Dip Env Law, Grad Dip H L, Grad Dip IL, Grad Dip Pub H L, M A L P, M B L, M Env Law, M Envi Sci Law, M **H** L, M **I**L, M Int Bus & Law, M L L **R.** TBA. **Session:** S2 Intensive, SI Intensive, Semester 1. **Assessment:** attendance and participation at workshops (30%) and assignment on case analysis, statutory interpretation and substantive legal principle (70%).
NB: Compulsory for health law, environmental law, MLLR, MALP, MIR&HRM, MEnvSciLaw, MIntBus&L andMBL candidates undertaking tax units who do not have a qualification in accountancy or who have not completed a legal studies unit as part of a degree in business or commerce within a common law jurisdiction. This unit is a pre-requisite for specified law units. Candidates enrolled in other courses may seek permission to undertake this unit as an optional.
This is a compulsory unit for all postgraduate students without a legal qualification entering the:
- Masters of Administrative Law and Policy
- Masters of Environmental Law
- Masters of Health Law
- Masters of Environmental Science and Law
- Masters of International Business and Law
- Masters of Labour Law and Relations

as well as Graduate Diplomas offered in these programs.
The unit has been designed to equip candidates with the necessary legal skills and legal knowledge to competently apply themselves in their chosen area of law. Instruction will cover the legislative process; the judiciary and specialist tribunals; precedent; court hierarchies; legal reasoning; constitutional law; administrative law; contracts; and torts. Some elements of the unit will be tailored in accordance with the requirements of the particular specialist programs.

LAWS 6257 **Public Policy**

6 credit points. Grad Dip Env Law, Grad Dip Post Law, Grad Dip Tax, LL M, M A L P, M B L, M Env Law, M Envi Sci Law, M Int Tax, M Tax, S J D. Professor Patricia Apps. **Session:** S2 Late Int. **Prerequisites:** LAWS6252 Legal Reasoning and the Common Law System (MALP, MEL, GradDipEnvLaw candidates) or LAWS6044 Environmental Law & Policy (MEL, GradDipEnvLaw candidates). **Prohibitions:** LAWS6139 Public Sector Policy 1; LAWS6042 Environmental Economics and LAWS6113 Taxation and Social Policy. **Assessment:** research essay (90%); problem-based assignments and class presentation of a case study (10%).
NB: compulsory for MALP candidates
The aim of the unit is to provide an understanding of the role of government policy within the analytical framework of welfare economics. Questions of central interest include:
* What are the conditions that justify government intervention?
* How can policies be designed to support basic principles of social justice?
* What kinds of reforms promote economic efficiency?

Applications will range from taxation and social security to environmental regulation and protection, and will cover the following specific topics:
* The structure of the Australian tax-benefit system
* Uncertainty and social insurance
* Unemployment, health and retirement income insurance
* Externalities, environmental taxes and tradeable permits
* Monopoly and environmental regulation
* Utility pricing and access problems

* Cost benefit analysis, intergenerational equity and growth
The unit will provide an overview of the main empirical methodologies used in evaluating policy reforms in these areas.
Candidates may select to specialise in one or more of the policy areas.

History and Philosophy of Science

Graduate Certificate in Science (History and Philosophy of Science)

Course overview
The Graduate Certificate in Science (HPS) provides an introduction to the historical, philosophical, and sociological analysis of science. Candidates will be introduced to the main accounts of the nature of science and the methodologies underlying those interpretations.
Course outcomes
Upon completion of the Graduate Certificate candidates will understand the nature of the discipline of History and Philosophy of Science and will have acquired either basic research skills in history of science or basic skills in the sociological study of science or the basic skills of philosophical argument or some combination of the above, depending on their choice of options.
Admission requirements
Candidates must have a Bachelors Degree or equivalent.
Course requirements
Candidates must complete 24 credit points from the following units of study, including HPSC 4108 (if they have not completed a major in HPS or equivalent program of study at another institution). Each unit of study is worth 6 credit points.
Units of Study
- HPSC 4101 Philosophy of Science
- HPSC 4102 History of Science
- HPSC 4103 Sociology of Science
- HPSC 4104 Recent Topics in HPS
- HPSC 4105 HPS Research Methods
- HPSC 4108 Core Topics in HPS

Other information
The unit of study, HPSC4108 Core Topics in HPS, is not available to students who have completed a major in History and Philosophy of Science or equivalent program of study at another institution.
Course resolutions: see chapter 7.

HPSC 4101 **Philosophy of Science**

6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons), Grad Cert Sc (H P S), UG Study Abroad Program. Dr Ofer Gal. **Session:** Semester 2. **Classes:** One 2hr sem/wk, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Five short written assignments, seminar participation.
NB: Department permission required for enrolment. NB: Department permission required for enrolment

The success of science in enabling us to manipulate the natural world has been so surprising, so often, that it's caused every society to revise a large part of its pre-scientific philosophical and religious consensus. Something very important is going on, and a number of fascinating philosophical topics emerge when we try to analyse what it is. Working backwards from the success of an epistemological enterprise offers a fruitful way to do philosophy, and, reciprocally, our philosophical insights help to clarify the contentious question of what it means to claim that science is successful.
This unit investigates the relationships between scientific theories and evidence, and the relationships between scientific theories and other scientific theories. Participants will have an opportunity to relate the successes and failures of specific sciences to contemporary philosophical debates. Each week the seminar will discuss a piece of philosophical theory in the light of examples from particular sciences. Technical topics will be covered, but very little background knowledge will be assumed.
Textbooks
Blackburn S., The Oxford Dictionary of Philosophy, and course reader.

HPSC 4102 **History of Science**

6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons), Grad Cert Lib Stud, Grad Cert Medical Hum, Grad Cert Sc (H P S), Grad Dip Lib Stud, M Lib Stud, PG Coursework Exchange, UG Study Abroad Program. HPS Staff. **Session:** Semester 1, Semester 2. **Classes:** One 2hr sem/wk. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Essays, seminar participation.
NB: Department permission required for enrolment. NB: Department permission required for enrolment

This unit explores major episodes in the history of science as well as introducing students to historiographic methods. Special attention is paid to developing practical skills in the history and philosophy of science.
Textbooks
Course reader

HPSC 4103 **Sociology** of **Science**

6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons), Grad Cert Lib Stud, Grad Cert Sc (H P S), Grad Dip Lib Stud, M Lib Stud, UG Study Abroad Program. Dr Hans Pols. **Session:** Semester 1. **Classes:** One 2hr sem/wk, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Essays, fieldwork report, seminar participation mark.
NB: Department permission required for enrolment. NB: Department permission required for enrolment.

This unit explores recent approaches in the social studies of scientific knowledge. Students evaluate various sociological approaches by conducting their own research on topics relevant to their own major thesis.
The unit starts with an overview of the development of history and philosophy of science since 1945, to put the emergence of the sociology of science into perspective, before moving on to a selection of readings from the field. Topics will include: the strong program critique of traditional philosophy of science, the sociology of technology, the impact of feminism on the study of science, and the actor-network approach developed by Bruno Latour and Michel Callon.
Textbooks
Course reader

HPSC 4104 **Recent Topics in HPS**

6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons), Grad Cert Sc (H P S), PG Coursework Exchange, UG Study Abroad Program. HPS Staff. **Session:** Semester 1, Semester 2. **Classes:** One 2hr sem/wk, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Essays, seminar participation.
NB: Department permission required for enrolment. NB: Department permission required for enrolment.

An examination of one area of the contemporary literature in the history and philosophy of science. Special attention will be paid to development of research skills in the history and philosophy of science.
Textbooks
Course reader

HPSC 4105 **HPS Research Methods**

6 credit points. B A (Hons), B Med Sc (Hons), B Sc (Hons), Grad Cert Sc (H P S). Dr Rachel Ankeny. **Session:** Semester 2, Semester 1. **Classes:** One 2hr sem/wk, individual consultation. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Assessment:** Literature review, archival research project, seminar participation mark, short essays.
NB: Department permission required for enrolment. NB: Department permission required for enrolment.

Adopting a seminar style, this unit provides students with an advanced knowledge of the skills necessarily to conduct their own original research in the sociology, history and philosophy of science. Participants will be given a weekly set of core readings, and specialists both from within the Unit and from outside will present their views on the topic in question. This presentation will form the basis for a discussion involving the students, the academic members of the Unit, and invited speakers.
Topics will include: the use of case studies in the philosophy of science, how to conduct oral history projects, institutional history, and sociology of science.
Textbooks
Course reader

HPSC 4108 **Core topics: History & Philosophy of Sci**

6 credit points. B A, B Med Sc (Hons), B Sc (Hons), Grad Cert Sc (H P S), PG Coursework Exchange, PG Summer/Winter School. HPS staff. **Session:** Semester 1, Semester 2. **Classes:** 1 sem/wk. **Prerequisites:** Available only to students admitted to HPS Honours, Graduate Diploma in Science (History and Philosophy of Science) and Graduate Certificate in Science (History and Philosophy of Science), or by special permission. **Prohibitions:** Not available to students who have completed a major in History and Philosophy of Science or an equivalent program of study at another institution.. **Assessment:** Essays, seminar presentations, seminar participation mark.
NB: Department permission required for enrolment.

An intensive reading course, supported by discussion seminars, in the main figures and events of the 'Scientific Revolution' of the 16th to 18th centuries, in the leading historiographic interpretations of the scientific revolution and in the use of episodes in the scientific revolution as evidence for the philosophies of science of Karl Popper, Imre Lakatos, Thomas Kuhn and contemporary authors.
Textbooks
Course reader

Information Technology

Graduate Diploma in Computing

Course Overview

The University of Sydney offers targeted postgraduate programs in IT to meet the demand of the IT industry. For students who already have an IT background, there is the articulated program of the Graduate Certificate in Information Technology, the Graduate Diploma in Information Technology, and the degree of Master of Information Technology. These programs provide a core of knowledge in information technology, supplemented by a broad range of options within areas of Computer Networks and the Internet, E-Business, Multimedia, Database Management and Administration, Software Engineering, Business Information Systems, and Computer Science. For IT graduates, they provide an excellent opportunity for in-depth study of specialist areas, possibly leading to research, or a retraining opportunity for IT graduates wishing to extend the breadth of their expertise.

The University also recognises that there are many graduates from disciplines other than IT who seek a career change, either by moving into the IT industry or by enhancing their existing career with IT qualifications. The Graduate Diploma in Computing is specifically designed for graduates without an IT degree. The Graduate Diploma in Computing provides a selection of Elementary and Foundational units of study that provide a grounding in basic IT topics. For many students this provides the required amount of IT skills to enhance their existing career. For students seeking further IT study, the Graduate Diploma in Computing prepares students for admission to the Master of Information Technology.

The combination of the Graduate Diploma in Computing followed by the Master of Information Technology provides an effective conversion program into the field of IT for graduates without an IT degree.

Course Outcomes

Upon completion of the Graduate Diploma in Computing, graduates will possess a practical and theoretical background in some of the basic aspects of Information Technology. Graduates who satisfactorily complete the Graduate Diploma will also be eligible for admission to the Master of Information Technology. Satisfactory completion of the Graduate Diploma in Computing for purposes of entry into the Master of Information Technology require that a candidate has not failed more than 12 credit points of units of study in the Graduate Diploma in Computing.

Admission Requirements

Applicants for the Graduate Diploma in Computing should hold a Bachelor's degree in a discipline other than IT. The Graduate Diploma assumes significant numeracy skills such as those found in a Science or Engineering degree. Applicants holding a Bachelor's degree in other areas who have completed relevant subjects with a mathematical foundation will also be eligible. Alternatively, applicants holding a Bachelor's degree in any discipline and who have worked in Information Technology for more than 5 years are eligible. All applicants must have completed their Bachelor's degree with Credit average results or better.

Course Requirements

- A total of 48 credit points must be completed from the listed Computing units of study;
- 18 units of study must be completed before COMP5114 Digital Media Fundamentals can be taken;
- 18 credit points must be completed before COMP5028 Object Oriented Analysis and Design can be taken;
- 18 credit points must be completed before COMP5116 Internet Protocols can be taken;
- COMP5214 Software Development in Java and COMP5217 Software Construction cannot be taken in the same semester;
- COMP5217 Software Construction cannot be taken until at least 12 credit points of study, including COMP5214 Software Development in Java, have been completed.

Credit for previous study

Credit for previous study will not be granted in the Graduate Diploma in Computing. Units of study completed in the Graduate Diploma in Computing cannot be counted as units of study completed within the Graduate Certificate of Information Technology, Graduate Diploma of Information Technology, or Master of Information Technology.

Units of study

The units of study offered may change annually.

COMP 5028 **Object-Oriented Analysis and Design**

6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip Comp, PG Summer/Winter School. **Session:** Semester 1, Semester 2, Summer. **Classes:** 2 lee & 1 tut/wk. **Assessment:** Assignments, written exam.

This unit introduces Object-Oriented Analysis and Design especially the principles of modelling through Rational Unified Process and agile processes using Unified Modeling Language (UML), both of which are industry standard. Students work in small groups to experience the process of object-oriented analysis, architectural design, object-oriented design, implementation and testing by building a real-world application.

Objectives: In this unit students will develop the ability to:
- identify how the system interacts with its environment;
- identify appropriate objects and their attributes and methods;
- identify the relationships between objects;
- write the interfaces of each object and exception handling;
- implement and test the objects;
- read and write various UML diagrams (use case, activity, class, object, sequence, collaboration, state chart, component and deployment diagrams).

COMP 5114 **Digital Media Fundamentals**

6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip Comp, M E S (Auto Manuf Sys), PG CourseworkExchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Assessment:** Assignments, written exam.

This unit provides an overview of processing digital media which include text, audio, pictorial data and video. It introduces various processing techniques and standards, and presents some applications. Objectives: The unit covers Multimedia Primer; Text Processing which includes text parsing, text summarization, text manipulation, text index and retrieval, and surrogate coding; Audio Data Processing which includes audio attribute, audio masking, MP3 audio, audio manipulation and audio segmentation; pictorial data processing which includes still image processing, multi-modal image processing and artificial image processing; video data processing which includes active image processing, video segmentation, motion analysis, moving object extraction, video representation and codification.

COMP 5116 **Internet Protocols**

6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip Comp, M E S (Net Eng), PG Summer/Winter School. **Session:** Semester 1, Semester 2, Summer. **Classes:** 2 lectures and 1 tutorial/week. **Assessment:** Assignments, written examination.

In this unit students will develop the ability to gain in depth knowledge of the structure and algorithms used in the TCP/IP networking protocols that make up the foundation of the Internet. Furthermore, the unit will provide students with the architectural insight to being able to design and analyse protocols in the perspective of their intended use.

Objectives: On completion of this unit students will develop an understanding on the layered model, the core protocols, the routing protocols, the link layer and the various tools for traffic and protocol analysis.

COMP 5206 **Introduction to Information Systems**

6 credit points. Grad Cert Appl IT, Grad Cert Inf Tech Man, Grad Dip Comp, M E S (Auto Manuf Sys), M E S (Manuf KI Proj Man), M Sc. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Prohibitions:** INFO5210. **Assessment:** Assignments, written exam.

This unit provides an introduction to information systems in organisations and the role of database management. It introduces the fundamentals of database management, along with the modeling and analysis that is needed for designing and implementing database solutions. The unit also introduces a database query language.

Objectives: On completion of this unit students will be able to develop an understanding of the role of information systems in organisations, and the value of data and information to organisations. Students will also develop skills in creating database solutions, capturing user requirements, and building process and data models.

COMP 5211 **Algorithms**

6 credit points. Grad Cert Appl IT, Grad Dip Comp, M Sc, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assessment:** Assignments, written exam.

The study of algorithms is a fundamental aspect of computing. This unit of study covers data structures, algorithms, and gives an overview of the main ways of thinking used in IT from simple list manipulation and data format conversion, up to shortest paths and cycle detection in graphs. Objectives: Basic concepts in data structure, algorithm, dynamic programming and program analysis. Students will gain essential knowledge in computer science.

COMP 5212 **Software Construction**
6 credit points. Grad Dip Comp, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Prerequisites:** Students cannot enrol until they have completed at least 12 cp of study in the Graduate Diploma in Computing, including COMP5214 Software Development in Java. **Assessment:** Assignments, written exam.
This is a programming unit of study focusing on the C language, with emphasis on the individual producing code that works correctly. Topics include: the memory model, and errors associated with that (including pointers, malloc/free, sizeof, stack vs heap); coding simple dynamic data structures (linked lists, binary trees); debugging; threads, and errors associated with them; use of Unix tools for managing programming activities such as testing; learning from manual entries for standard library functions and Unix commands. Objectives: On completion of this unit students will have acquired programming skills and techniques applicable to the development of software used in areas such as networking, computer engineering, language translation, and operating systems.

COMP 5213 **Computer and Network Organisation**
6 credit points. Grad Cert App Sc (Bioinformatics), Grad Cert Appl IT, Grad Cert Inf Tech Man, Grad Dip Comp, M Sc, PG Coursework Exchange. **Session:** Semester 2, Semester 1. **Classes:** 2 lee & 1 tut/wk. **Assessment:** Assignments, written exam.
This unit of study is an overview of hardware and system infrastructure software including compilers, operating systems, device drivers, network protocols, etc. It also includes user-level Unix skills and network usability.
Objectives: On completion of this unit students will have developed an understanding of compilers, operating systems, device drivers, network protocols, Unix skills and network usability.

COMP 5214 **Software Development in Java**
6 credit points. Grad Cert App Sc (Bioinformatics), Grad Cert Appl IT, Grad Dip Comp, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assessment:** Assignments, written exam.
This unit of study introduces software development method where the main emphasis is on the careful adherence to a process. It includes design methodology, quality assurance, group work, version control, and documentation. It will suit students who do not come from a programming background but who want to learn the basics of computer software.
Objectives: This unit of study covers system analysis, design methodology, quality assurance, group collaboration, version control, software delivery and system documentation.

Graduate Certificate in Information Technology
Graduate Diploma in Information Technology
Master of Information Technology

Course Overview

The University of Sydney offers planned, targeted postgraduate programs in IT to meet the demand of the IT industry. This articulated program includes the Graduate Certificate in Information Technology, the Graduate Diploma in Information Technology and the Master of Information Technology degree and is designed to provide a core of knowledge in information technology, supplemented by a broad range of options within areas of Computer Networks and the Internet, E-Business Technologies, Multimedia, Database Management and Administration, Software Engineering, Business Information Systems, etc. The combination of core units and electives provides an excellent retraining opportunity. Students will not only obtain breadth and depth in their knowledge of the IT industry but will also be able to choose from a selection of options which will allow them to focus on a specialisation in the broad span of the industry.
The Master of Information Technology requires 1 year (2 semesters) of full-time study. The degree is designed to teach you current developments in topics you have already studied as well as extend your knowledge in advanced computing subjects. The program consists of coursework and/or projects in your major area of interest.
During the first semester of attendance you have the opportunity to select from a number of Information Technology units of study. These cover topics in software engineering, database systems, multimedia, computer networks, business information systems, telecommunications engineering, and computer engineering.
Also available is a selection of specialist units of study covering advanced topics within various areas. In addition you have the option to choose information technology projects to replace some specialist units in the second semester if the average mark of your units of study is credit or above. The project involves a substantial piece of programming using the knowledge gained during the course and may be related to your employment.

Course Outcomes

Upon completion of the Graduate Certificate, graduates will possess a practical and theoretical background in some of the basic aspects of Information Technology. This can be supplemented and extended upon completion of the Graduate Diploma, and extended further to include research and practical skills by completion of the Masters program.
Upon completion of the Master of Information Technology graduates will have a sound knowledge base in several contemporary topics within information technology. They may also have the opportunity of applying this knowledge to the implementation of a useful system. The Master of Information Technology is recognised as an industry relevant award, and it has been accredited by the Australian Computer Society (ACS) as a Professional Level course in information technology.

Admission Requirements

Applicants for the Graduate Certificate in Information Technology should hold a Bachelor's degree with substantial study of a relevant field of Information Technology; or a Bachelor of Engineering, Software Engineering or Telecommunications Engineering; or be able to offer evidence of recognised prior learning which is considered to demonstrate the knowledge and aptitude required to undertake this course.
Applicants for the Graduate Diploma in Information Technology should hold a Bachelor's degree with substantial study of a relevant field of Information Technology; or a Bachelor of Engineering with a major sequence of study in Computer Engineering, Software Engineering or Telecommunications Engineering; or have completed the Graduate Certificate in Information Technology at the University of Sydney with credit average results or above.
Applicants for the Master of Information Technology should hold a Bachelor's degree with credit average results in a major sequence in any aspect of Information Technology; or a Bachelor of Engineering with credit average results in a major sequence in Computer Engineering, Software Engineering or Telecommunications Engineering; or have completed the Graduate Diploma in Information Technology at the University of Sydney with credit average results or above; or have satisfactorily completed the Graduate Diploma in Computing at the University of Sydney. Satisfactory completion of the Graduate Diploma in Computing for purposes of entry into the Master of Information Technology require that a candidate has not failed more than 12 credit points of units of study in the Graduate Diploma in Computing.

Course Requirements

Graduate Certificate in Information Technology:
o A total of 24 credit points must be completed;
o Credit points can be selected from Foundational and Specialist units of study, excluding INFO5990 and IT project units of study.
Graduate Diploma in Information Technology:
* A total of 36 credit points must be completed;
* A maximum of 24 credit points can be selected from Foundational units of study;
* At least 12 credit points should come from Specialist units of study, excluding INFO5990 and IT project units of study.
Master of Information Technology:
* A total of 48 credit points must be completed;
* A maximum of 24 credit points can be selected from Foundational units of study;
* At least 24 credit points should come from Specialist units of study or IT project units of study;
* Every student must complete a defined major in the Master of Information Technology, which requires them to complete at least 18 credit points of Core units in the designated major;
* After completing 24 credit points of course work, students who achieve Credit average results or above in their coursework may select 12 credit points of IT project units of study among their Specialist units;
* After completing 24 credit points of course work, students who have Distinction average results or above may be eligible for the Research path subject to the approval of the Head of the School of Information Technologies and the Dean;
* Students who pursue the Research path must study INFO4990 and select 18 credit points from IT research project units of study.

Credit for previous study

Credit is available in the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology and Master of Information Technology for postgraduate study which has been undertaken in these award courses within the previous three years and for which no award has been conferred. If an award has been conferred, credit for study in these award courses is limited to 12

credit points. Students enrolled in either the GradCertIT, GradDipIT, or MlnfTech are not permitted to transfer to the Master of Applied Information Technology course.
Course Resolutions: see chapter 7.

Units of study available in 2006

The units of study offered may change annually.

Unit of study	Semester
Unless otherwise indicated, all units are worth 6 credit points	
Foundational units	
COMP 5114 Digital Media Fundamentals	1,2
COMP 5028 Object Oriented Analysis and Design	1,2
COMP 5116 Internet Protocols	1,2
COMP 5138 Relational Database Management Systems	1,2
INFS 6000 Business Information Systems	1,2
MATH 4421 Mathematical Foundations for Finance	1
Specialist units	
COMP 5318 Knowledge Discovery and Data Mining	1,2
COMP 5338 Advanced Data Models	1,2
COMP 5347 E-Commerce Technology	1,2
COMP 5348 Enterprise Scale Software Development	1
COMP 5415 Multimedia Authoring and Production	2
COMP 5416 Advanced Network Technologies	1,2
COMP 5424 Information Technology in Biomedicine	1
COMP 5425 Multimedia Storage, Retrieval and Delivery	1
COMP 5426 Network Based High Performance Computing	1
INFO 4990 IT Research Methods	1,2
INFO 5990 Professional Practice in IT	1,2
INFO 5991 IT Professional Services	2
INFO 6007 Project Management in IT	1,2
ELEC 5303 Computer Control System Design	1
ELEC 5508 Wireless Engineering	2
ELEC 5509 Advanced Communication Networks	1
ELEC 5510 Satellite Communication Systems	2
ELEC 5511 Optical Communication Systems	1
ELEC 5512 Optical Networks	2
ELEC 5513 Network Management and Queuing Theory	2
ELEC 5614 Real Time Computing	2
ELEC 5615 Advanced Computer Engineering	2
ELEC 5616 Computer & Network Security	1
HEVIT 5057 Introduction to Health Informatics	1
HEVIT 5058 Health Informatics Applications	2
HEVIT 5060 Integration of Health Informatics	2
HEVIT 5069 Health Care Systems	1
INFS 6001 Management Information Systems	1,2
INFS 6001 BIS Management	1,2
INFS 6002 BIS Strategy	2
INFS 6004 BIS Change Management	1
INFS 6012 Business Process Integration	1
INFS 6013 Risk Management & BIS Assurance	2
INFS 6014 BIS Project Management	2
INFS 6015 Business Process Management	2
INFS 6016 Internet Business Models & Strategies	1,2
INFS 6017 Strategic Information Design & Management	1
MATH 4431 Advanced Option Pricing	2
MATH 4433 Interest Rate Modelling	2
IT project units	
COMP 5702 IT Research Project A (12 cp)	1,2
COMP 5703 Information Technology Project (12 cp)	1,2
COMP 5704 IT Research Project B	1,2

Units of study available in majors in 2006

The following majors are available in the Masters of Information Technology. Majors are not defined for the Graduate Certificate or for the Graduate Diploma in Information Technology.

Core Units for Computer Networks major

To achieve a major in Computer Networks, a student must complete ESTFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990.

Unless otherwise indicated, all units are worth 6 credit points.

COMP 5416 Advanced Network Technologies

COMP 5426 Network Based High Performance Computing

COMP 5703 Information Technology Project (12 cp)

Only available to the Research path:

COMP 5702 IT Research Project A (12 cp)

COMP 5704 IT Research Project B

(COMP 5702 + COMP 5704 = 18 cp)

Core Units for Multimedia Technology major

To achieve a major in Multimedia Technology, aL student must complete INFO5990 and 12 credit points of study units from this list, Students in the Research path must complete INFO4990 instead of INFO5990.

Unless otherwise indicated, all units are worth 6 credit points.

COMP 5415 Multimedia Authoring and Production

COMP 5425 Multimedia Storage, Retrieval and Delivery

COMP 5703 Information Technology Project (12 cp)

Only available to the Research path:

COMP 5702 IT Research Project A (12 cp)

COMP 5704 IT Research Project B

(COMP 5702 + COMP 5704 = 18 cp)

Core Units for Database Management Systems major

To achieve a major in Database Management Systems, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990.

Unless otherwise indicated, all units are worth 6 credit points.

COMP 5338 Advanced Data Models

COMP 5318 Knowledge Discovery and Data Mining

COMP 5703 Information Technology Project (12 cp)

Only available to the Research path:

COMP 5702 IT Research Project A (12 cp)

COMP 5704 IT Research Project B

(COMP 5702 + COMP 5704 = 18 cp)

Core Units for Software Engineering major

To achieve a major in Software Engineering, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990.

Unless otherwise indicated, all units are worth 6 credit points.

COMP 5347 E-Commerce Technology

COMP 5348 Enterprise Scale Software Development

COMP 5703 Information Technology Project (12 cp)

Only available to the Research path:

COMP 5702 IT Research Project A (12 cp)

COMP 5704 IT Research Project B

(COMP 5702 + COMP 5704 = 18 cp)

Core Units for Computer Science major

To achieve a major in Computer Science, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990.

Unless otherwise indicated, all units are worth 6 credit points.

COMP 5425 Multimedia Storage, Retrieval and Delivery

COMP 5426 Network Based High Performance Computing

COMP 5318 Knowledge Discovery and Data Mining

COMP 5348 Enterprise Scale Software Development

COMP 5703 Information Technology Project (12 cp)

Only available to the Research path:

COMP 5702 IT Research Project A (12 cp)

COMP 5704 IT Research Project B

(COMP 5702 + COMP 5704 = 18 cp)

Core Units for Telecommunications Engineering major

To achieve a major in Telecommunications Engineering, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the School of EIE. A maximum of 18 credit points of ELEC-coded units of study can be completed.

Unless otherwise indicated, all units are worth 6 credit points.

ELEC 5508 Wireless Engineering

ELEC 5509 Advanced Communication Networks

ELEC 5510 Satellite Communication Systems

ELEC 5511 Optical Communication Systems

ELEC 5512 Optical Networks

COMP 5703 Information Technology Project (12 cp)

Only available to the Research path:

COMP 5702 IT Research Project A (12 cp)

COMP 5704 IT Research Project B

(COMP 5702 + COMP 5704 = 18 cp)

Core Units for Computer Engineering major

To achieve a major in Computer Engineering, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the School of EIE. A maximum of 18 credit points of ELEC-coded units of study can be completed.

Unless otherwise indicated, all units are worth 6 credit points.

ELEC 5303 Computer Control System Design

ELEC 5513 Network Management and Queuing Theory

ELEC 5614 Real Time Computing

ELEC 5615 Advanced Computer Engineering

ELEC 5616 Computer and Network Security

COMP 5703 Information Technology Project (12 cp)

Only available to the Research path:

COMP 5702 IT Research Project A (12 cp)

COMP 5704 IT Research Project B

(COMP 5702 + COMP 5704 = 18 cp)

Core Units for E-Business Technologies major

To achieve a major in E-Business Technologies, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990. All Specialist INFS-coded units of study have the Foundational INFS6000 as assumed knowledge. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the Chair of the BIS Discipline. A maximum of 18 credit points of INFS-coded units of study can be completed.

Unless otherwise indicated, all units are worth 6 credit points.

INFS 6001 Management Information Systems

INFS 6004 Change Agent Consulting for IT Industry

INFS 6012 Integrated Enterprise Systems

INFS 6014 IT Project Management

INFS 6016 Internet Business Models & Strategies

COMP 5703 Information Technology Project (12 cp)

Only available to the Research path:

COMP 5702 IT Research Project A (12 cp)

COMP 5704 IT Research Project B

(COMP 5702 + COMP 5704 = 18 cp)

Core Units for Business Information Systems major

To achieve a major in Business Information Systems, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990. All Specialist INFS-coded units of study have the Foundational INFS6000 as assumed knowledge. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the Chair of the BIS Discipline. A maximum of 18 credit points of INFS-coded units of study can be completed.

Unless otherwise indicated, all units are worth 6 credit points.

INFS 6001 Management Information Systems
INFS 6002 Information Technology Strategy and Management
INFS 6012 Integrated Enterprise Systems
INFS 6013 IT Risk Management and Assurance
INFS 6014 IT Project Management
INFS 6015 Business Process Analysis and Design
INFS 6017 Knowledge Management
COMP 5703 Information Technology Project (12 cp)
ELEC 8900 Project full time (12 cp)
Only available to the Research path:
COMP 5702 IT Research Project A (12 cp)
COMP 5704 IT Research Project B
(COMP 5702 + COMP 5704 = 18 cp)

Core Units for Financial Modelling major
To achieve a major in Financial Modelling, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the Chair of the School of Mathematics and Statistics. Unless otherwise indicated, all units are worth 6 credit points. A maximum of 18 credit points of MATH-coded units of study can be completed.
MATH 4431 Advanced Option Pricing
MATH 4433 Interest Rate Modelling
COMP 5703 Information Technology Project (12 cp)
Only available to the Research path:
COMP 5702 IT Research Project A (12 cp)
COMP 5704 IT Research Project B
(COMP 5702 + COMP 5704 = 18 cp)

Core Units for Project Management major
To achieve a major in Project Management, a student must complete INFO5990 and 12 credit points of study units from this list, including INFO6007 or INFS6014. Students in the Research path must complete INFO4990 instead of INFO5990. All Specialist INFS-coded units of study have the Foundational INFS6000 as assumed knowledge. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the Chair of the BIS Discipline. INFO6007 and INFS 6014 are mutually exclusive, and students can take only one of these two units of study. A maximum of 18 credit points of INFS-coded units of study can be completed.
Unless otherwise indicated, all units are worth 6 credit points.
INFS 6001 Management Information Systems
INFS 6002 Information Technology Strategy and Management
INFO 6007 Project Management in IT
INFS 6014 IT Project Management
COMP 5703 Information Technology Project (12 cp)
Only available to the Research path:
COMP 5702 IT Research Project A (12 cp)
COMP 5704 IT Research Project B
(COMP 5702 + COMP 5704 = 18 cp)

Core Units for Health Informatics major
To achieve a major in Health Informatics, a student must complete INFO5990 and 12 credit points of study units from this list, including HEVIT5057. Students in the Research path must complete INFO4990 instead of INFO5990. HIMT5057 must be completed before HIMT5058 or HEVIT5060 can be taken. Inclusion of a COMP-coded Project unit of study in this major requires the permission of the School of IT and the School of Health Information Management. A maximum of 18 credit points of HIMT-coded units of study can be completed
Unless otherwise indicated, all units are worth 6 credit points.
COMP 5424 Information Technology in Biomedicine
HIMT 5057 Introduction to Health Informatics
HEVIT 5058 Health Information Applications
HEVIT 5060 Integration of Health Information
HEVIT 5069 Health Care Systems
COMP 5703 Information Technology Project (12 cp)
Only available to the Research path:
COMP 5702 IT Research Project A (12 cp)
COMP 5704 IT Research Project B
(COMP 5702 + COMP 5704 = 18 cp)

Information Technology units of study

Foundational units of study

COMP 5114 **Digital Media Fundamentals**

6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip Comp, M E S (Auto Manuf Sys), PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Assessment:** Assignments, written exam.

This unit provides an overview of processing digital media which include text, audio, pictorial data and video. It introduces various processing techniques and standards, and presents some applications.
Objectives: The unit covers Multimedia Primer; Text Processing which includes text parsing, text summarization, text manipulation, text index and retrieval, and surrogate coding; Audio Data Processing which includes audio attribute, audio masking, MP3 audio, audio manipulation and audio segmentation; pictorial data processing which includes still image processing, multi-modal image processing and artificial image processing; video data processing which includes active image processing, video segmentation, motion analysis, moving object extraction, video representation and codification.

COMP 5116 **Internet Protocols**

6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip Comp, M E S (Net Eng), PG Summer/Winter School. **Session:** Semester 1, Semester 2, Summer. **Classes:** 2 lectures and 1 tutorial/week. **Assessment:** Assignments, written examination.

In this unit students will develop the ability to gain in depth knowledge of the structure and algorithms used in the TCP/IP networking protocols that make up the foundation of the Internet. Furthermore, the unit will provide students with the architectural insight to being able to design and analyse protocols in the perspective of their intended use.
Objectives: On completion of this unit students will develop an understanding on the layered model, the core protocols, the routing protocols, the link layer and the various tools for traffic and protocol analysis.

COMP 5138 **Relational Database Management Systems**

6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man, PG Summer/Winter School. **Session:** Semester 1, Semester 2, Summer. **Classes:** 2 lee, 1 tut/wk. **Prohibitions:** COMP5015. **Assessment:** Assignments, written exam.

This unit of study will provide a comprehensive conceptual and practical introduction to managing large relational databases. Relational and normalization theory will be emphasized along with a focus on relational query language (SQL).
Objectives: In this unit students will develop the ability to:
- Understand the foundations of database management;
- Strengthen their theoretical knowledge of database systems in general and relational data model and systems in particular;
- Create robust relational database designs;
- Understand the theory and applications of relational query processing and optimization;
- Study the critical issues in data and database administration;
- Explore the key emerging topics in database management.

COMP 5028 **Object-Oriented Analysis and Design**
6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip Comp, PG Summer/Winter School. **Session:** Semester 1, Semester 2, Summer. **Classes:** 2 lee & 1 tut/wk. **Assessment:** Assignments, written exam.
This unit introduces Object-Oriented Analysis and Design especially the principles of modelling through Rational Unified Process and agile processes using Unified Modeling Language (UML), both of which are industry standard. Students work in small groups to experience the process of object-oriented analysis, architectural design, object-oriented design, implementation and testing by building a real-world application.
Objectives: In this unit students will develop the ability to:
- identify how the system interacts with its environment;
- identify appropriate objects and their attributes and methods;
- identify the relationships between objects;
- write the interfaces of each object and exception handling;
- implement and test the objects;
- read and write various UML diagrams (use case, activity, class, object, sequence, collaboration, state chart, component and deployment diagrams).

INFS 6000 **Business Information Systems**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, M B IS, M Com, M E S (Manuf Com Bus Man), PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 3 hours per week.
The objective is to help you understand (i) using data to meet organizational objectives and expected outcomes, ii) the complex and changing information environment from the perspective of stakeholders, and (iii) the management issues associated with making effective use of the combined capabilities of technology and employee knowledge. These are explored with reference to enterprise-wide systems as well as small to medium systems in business and government. Understanding is fostered through presenting conceptual frameworks, analytical tools and research findings from over 30 years in business information systems. Four themes are referenced during the unit: data and data structures as a corporate resource; core business processes within business cycles; ethics and socio-technical issues in BIS, and, information and knowledge for business intelligence and decisions by managers.

MATH 4421 **Mathematical Foundations for Finance**
6 credit points. M Inf Tech, PG Coursework Exchange, Science PG Non-Degree. **Session:** Semester 1. **Classes:** Lectures/tutorials : 3 hrs per week in total. **Assessment:** 60% from final exam, 40% from assignments.
Review of ODEs; Partial differentiation, multi-variate Taylor's theorem, multi-variate optimisation using Lagrange parameters; Review of PDEs; general methods for linear PDEs diffusion/heat equation, Green functions, the role of boundary conditions, Dirac delta function; Review of probability: discrete and continuous distributions, expectation; mean, variance and covariance; the normal distribution; basic properties, central limit theorem, log-normal distribution, bivariate normal distribution, Gaussian Shift Theorem; Random walks, Brownian motion, diffusion, Geometric Brownian motion, Martingales; Introduction to SDEs; basic rules of Ito calculus; Feynman-Kac formula; Financial relevance of SDE, First Fundamental Theorem of Asset Pricing, derivation of Black-Scholes option pricing formula

Specialist units of study

COMP 5318 **Knowledge, Discovery and Data Mining**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT, Grad Dip App Sc (M B T), PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** COMP5138 Relational Database Management Systems. **Assessment:** Assignments, written exam.
Knowledge discovery is the process of extracting useful knowledge from data. Data mining is a discipline within knowledge discovery that seeks to facilitate the exploration and analysis of large quantities of data, by automatic or semiautomatic means. This subject provides a practical and technical introduction to knowledge discovery and data mining.
Objectives: Topics to be covered include problems of data analysis in databases, discovering patterns in the data, and knowledge interpretation, extraction and visualisation. Also covered are analysis, comparison and usage of various types of machine learning techniques and statistical techniques: clustering, classification, prediction, estimation, affinity grouping, description and scientific visualisation.

COMP 5347 **e-Commerce Technology**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT, Grad Dip App Sc (M B T), M E S (Manuf Com Bus Man), PG Coursework Exchange. **Session:** Semester 2, Semester 1. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** COMP5028 Object Oriented Analysis and Design. **Assessment:** Assignments, written exam.
This unit will focus on technological advances supporting the development of e-commerce applications and systems. This includes server-side development of e-business applications, methodologies and practices for the development of web-applications, J2EE/Java-based support for front-end development, XML processing, and database integration, as well as web services development (SOAP, WSDL, UDDI) and handheld wireless integration.

COMP 5415 **Multimedia Authoring and Production**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT, Grad Dip IT, M AIT, M Inf Tech, PG Coursework Exchange. **Session:** Semester 2. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** COMP5114 Digital Media Fundamentals. **Assessment:** Assignments, written exam.
This unit provides fundamentals on multimedia authoring and production. It focuses on multimedia animation and authoring and introduces some multimedia authoring packages. The students will get a great exposure to the software authoring package Alice. It will study the applications of multimedia authoring in the areas of telemedicine, progressive animation, multi-casting, and distance learning.

COMP 5425 **Multimedia Storage, Retrieval & Delivery**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT. **Session:** Semester 1. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** COMP 5122 Multimedia Human Computer Interaction. **Assessment:** Assignments, written exam.
The unit covers Multimedia Storage and Compression, fundamental compression techniques, audio storage and compression, image storage and compression (JPEG, JBIG and JPEG2000), video storage and compression (MPEG, MPEG1, MPEG2, MPEG4 and MPEG7), Multimedia Information Retrieval information retrieval fundamentals, visual information retrieval, video cataloguing and retrieval issues of multimedia systems and delivery image watermarking, video watermarking, video encryption, future HCI, progressive transmitted images and video, multicasting control, immersive video for future digital TV

COMP 5416 **Advanced Network Technologies**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** COMP5116 Internet Protocols and COMP5126 Distributed Systems Programming. **Assessment:** Assignments, written exam.
The unit introduces networking concepts beyond the best effort service of the core TCP/IP protocol suite. Provides understanding of the fundamental issues in building an integrated multi-service network for global Internet services, taking into account service objectives, application characteristics and needs and network mechanisms. Enables students to understand the core issues and be aware of proposed solutions so they can actively follow and participate in the development of the Internet beyond the basic bit transport service.

COMP 5424 **Information Technology in Biomedicine**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT, Grad Dip IT, M Inf Tech. **Session:** Semester 1. **Classes:** 2 lee, 1 tut/wk. **Assessment:** Assignments, written exam.
Specialist/Elective
Information technology (IT) has significantly contributed to the research and practice of medicine, biology and health care. The IT field is growing enormously in scope with biomedicine taking a lead role in utilizing the evolving applications to its best advantage. The goal of this unit is to provide students with the necessary knowledge to understand the information technology in biomedicine. The major emphasis will be on the principles associated with biomedical digital imaging systems and their applications, computer modeling of biomedical systems, and biomedical system identification. Specialist areas such as medical image compression, telemedicine, Picture Archiving and Communication System (PACS), and web technology in biomedicine etc. will also be addressed.

COMP 5426 **Network Based High Performance Computing**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT, M E S (Net Eng). **Session:** Semester 1. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** COMP5126 Distributed Systems Programming. **Assessment:** Assignments, written exam.
This unit is intended to introduce and motivate the study of high performance computer systems. The student will be presented with the foundational concepts pertaining to the different types and classes of high performance computers. The student will be exposed to the description of the technological context of current high performance computer systems. Students will gain skills in evaluating, experimenting with, and optimizing the performance of high performance computers. The unit also provides students with the ability to under-

take more advanced topics and courses on high performance computing.

COMP 5338 **Advanced Data Models**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** COMP5138 Relational Database Management Systems. **Prohibitions:** COMP5306. **Assessment:** Assignments, written exam.
This course will offer a comprehensive survey of post-relational data models and technologies with significant emphasis on XML and content management on the world wide web. The important challenges in managing the complex and varied data in modern database environments will be specifically addressed.

ELEC 5303 **Computer Control System Design**
6 credit points. B E, M E S, M E S (Net Eng), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 hours of lectures and a 2 hour lab/tutorial per week. **Prohibitions:** ELEC4301 Computer Controlled System Design.. **Assessment:** Weekly quiz 10%, lab exam 10%, mid semester exam 25%, end of semester exam 55%.
NB: Department permission required for enrolment.
This unit aims to teach the basic issues involved in the analysis and design of computer-controlled systems. The emphasis is on theory rather than technological application or industrial practice. However, students are expected to test some of these ideas on a few benchmark control problems in the laboratory. Completion of the unit will facilitate progression to advanced study in the area and to work in industrial control. This unit assumes a basic knowledge of calculus, functions of real variables, Laplace transform, matrix theory and control theory.

The following topics are covered. Sampled data systems: aliasing. Zero order hold equivalent: inverse of sampling, sampling system with time delay. Properties of difference equations: solution, stability, change of co-ordinates, Z transform. Input output models: pulse response, pulse transfer operator, pulse transfer function, interpretation of poles and zeros.
Analysis of discrete time system: stability (Jury's test, Nyquist criterion, Lyapunov method), sensitivity and robustness, observability (observers, reduced order observers), reachability and controllers, loss of reachability/observability through sampling, output feedback, the Separation theorem. Optimal control: Kalman filter, linear quadratic regulator, output feedback, the Separation theorem. Approximating continuous time controllers. Finite word length implementations.

ELEC 5508 Wireless **Engineering**
6 credit points. B E, M E S, M E S (Net Eng), M E S (Wireless Eng), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 hours of lectures and a 1 hour tutorial per week. **Assumed Knowledge:** (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3504 Data Communications and the Internet or ELEC3506 Data Communications and the Internet or NETS2150 Fundamentals of Networking). **Prohibitions:** ELEC5504 Cellular Radio Engineering, ELEC4504 Wireless Networks.. **Assessment:** Assignment 30%, end of semester exam 70%.
This unit will introduce the key ideas in modern wireless telecommunications networks. It will address both physical layer issues such as propagation and modulation, plus network layer issues such as capacity, radio resource management and mobility management issues.

The following topics are covered. Mobile radio channel: Multipath fading, diversity, log-normal fading, mean propagation loss, propagation models. Cellular technologies: Cell types, coverage, frequency reuse, spectral efficiency, link budget, power budget, traffic capacity. Omnidirectional and sectorised antennas. Handover, interaction with the fixed network. Microcells and macrocells, Medium access control: Near-far effect and the hidden terminal problem. Multiple access schemes: FDMA, TDMA, CDMA. Aloha and s-Aloha, carrier sense multiple access, reservation-based MAC schemes, polling, spread-aloha multiple access. GSM: System architecture, radio resource management, mobility management, connection management.

Third generation systems: WCDMA and cdma2000. Wireless LANs: IEEE802.il, Hiperlan, Bluetooth. Convergence: GSM evolution to data services via GPRS and EDGE. Issues with TCP over wireless. Mobility management in MobilelP.

ELEC 5509 **Advanced Communication Networks**
6 credit points. B E, M E S, M E S (Net Eng), M E S (Wireless Eng), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 hours of lecture and a 2 hour tutorial per week. **Assumed Knowledge:** ELEC3504 Data Communications and the Internet or ELEC3506 Data Communications and the Internet or NETS3007 Network Protocols. **Prohibitions:** ELEC5501 Advanced Communication Networks.. **Assessment:** Report and seminar 25%, end of semester exam 75%.
This unit of study serves as an introduction to communications network research. The unit relies on a solid understanding of data communications and mobile networks. It introduces some of the currently most debated research topics in mobile networking and presents an overview of different technical solutions. Students are expected to critically evaluate these solutions in their context and produce an objective analysis of the advantages/disadvantages of the different research proposals. The general areas covered are wireless Internet, mobility management, quality of service in mobile and IP networks, ad hoc networks, and cellular network architectures.

The following topics are covered. Introduction to wireless and mobile Internet. Wireless cellular data networks. Cellular mobile networks. Mobile networks of the future. Quality of service in a mobile environment. Traffic modelling for wireless Internet. Traffic management for wireless Internet. Mobility management in mobile networks. Transport protocols for mobile networks. Internet protocols for mobile networks.

ELEC 5510 **Satellite Communication Systems**
6 credit points. B E, M E S, M E S (Wireless Eng), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 hours of lectures and a 1 hour tutorial per week. **Assumed Knowledge:** ELEC3505 Communications (or ELEC3503 Introduction to Digital Communications) and ELEC4505 Digital Communication Systems (or ELEC4502 Digital Communication Systems). **Prohibitions:** ELEC5502 Satellite Communications Systems.. **Assessment:** Class performance 5%, tutorial attendance 5%, assignment 20%, end of semester exam 70%.
Satellite communication systems provide fixed and mobile communication services over very large areas of land, sea and air. This unit presents the fundamental knowledge and skills in the analysis and design of such systems. It introduces students to the broad spectrum of satellite communications and its position in the entire telecommunications network; helps students to develop awareness of the key factors affecting a good satellite communications system and theoretical and practical skills in the design of a satellite communications link.

Topic areas include: satellite orbits and their properties; satellite subsystems; communications link design; satellite antenna; modulation and multiplexing techniques; multiple access techniques; error control for digital satellite links; propagation effects and their impact and satellite-earth links; satellite applications.

ELEC 5511 **Optical Communication Systems**
6 credit points. B E, M E S, M E S (Net Eng), M E S (Wireless Eng), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 hours of lectures and a 2 hour lab/tutorial per week. **Assumed Knowledge:** (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3402 Communications Electronics or ELEC3405 Communications Electronics and Photonics). **Prohibitions:** ELEC5503 Optical Communication Systems.. **Assessment:** Assignments and labs 25%, end of semester exam 75%.
Introduction to optical fibre communications. Optical fibre transmission characteristics; fibre modes, multi-mode fibres, single-mode fibres, dispersion, loss. Semiconductor and fibre laser signal sources; dynamic laser models, switching, chirp, noise, optical transmitters. Optical modulation techniques. Optical amplifiers and repeaters, noise characteristics. Fibre devices, gratings, multiplexers. Optical detectors, shot noise and avalanche noise. Optical receiver and regenerator structures; sensitivity and error rate performance. Photonic switching and processing. Optical local area networks. Multi-channel multiplexing techniques. Design of optical fibre communication systems.

ELEC 5513 **Network Management and Queuing Theory**
6 credit points. B E, M E S, M E S (Net Eng), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 hours of lecture and a 2 hours tutorial per week. **Assumed Knowledge:** ELEC3506 Data Communications and the Internet (or ELEC3504 Data Communications and the Internet) and ELEC3505 Communications (or ELEC3503 Introduction to Digital Communications). **Assessment:** Tutorial attendance 5%, assignments and group projects 25%, 2 hour end of semester exam 70%.
This unit presents the fundamental knowledge and skills in the design, planning and management of telecommunications networks. Upon successful completion, students will be able to understand the legal and social framework of network management; understand and appreciate key aspects of network design, planning and management; understand and apply techniques to solve real problems in network design, implementation and management.

Topic areas include: data communications and network management overview; review of computer network technology (LAN and WAN); simple network management protocol (SNMP) management; remote network monitoring (RMON); broadband network management, introduction to queuing theory and its application in network planning and design.

ELEC 5614 **Real Time Computing**
6 credit points. B E, M E S, M E S (Net Eng), UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2hours of lectures, 2hours of labs and a lhour tutorial per week. **Assumed Knowledge:** SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) and ELEC3607 Embedded Computing (or ELEC2601 Microprocessor Systems). **Prohibitions:** ELEC4602 Real Time Computing.. **Assessment:** Project and lab 25%, end of semester exam 75%.
This unit is concerned with the theory and practice of real time computer systems as applied to the design of embedded systems and computer control systems in engineering, manufacturing and automation. Some background in programming, object oriented design and system architecture is assumed. A prime aim of this unit of study is to develop a capacity for research and inquiry in the field of real-time and embedded systems. Completion of this unit will facilitate progression to advanced study or to work in embedded systems and industrial real-time computer systems.

The following topics are covered. Hard real time and embedded systems, as applied to engineering, manufacturing and automation. Timing and scheduling: periodic vs aperiodic processes, deadlines, rate monotonic, deadline monotonic and earliest deadline scheduling. Management of shared resources. Real-time languages and their features. Real time operating systems. Real time software design. Embedded Systems: overview, signal flow, interfacing. Reliability and fault tolerance in hardware and software. SCADA and DCCS. Some case studies.

ELEC 5615 **Advanced Computer Engineering**
6 credit points. B E, M E S, UG Study Abroad Program. **Session:** Semester 2. **Classes:** 2 hours of lectures and a 2 hour tutorial per week. **Assumed Knowledge:** ELEC4605 Computer Engineering or ELEC4601 Computer Design. **Prohibitions:** ELEC5611 Advanced Computer Engineering.. **Assessment:** Assignments 30%, end of semester exam 70%.
NB: Department permission required for enrolment.
This unit of study is comprised of a selection of topics covering advanced computer architecture, advanced digital engineering and embedded systems. They may be chosen from the following:

Advanced Computer Architecture: Processor organisation, parallelism, scalability, language and application driven architectures, design tools and methodologies.

Advanced Digital Engineering: Advanced hardware description language skills for ASIC and FPGA design; CAD methodologies; designing for low power, high speed, small area, low cost and testability; advanced printed circuit board design, system design exercises.

Advanced Embedded systems: System on chip design and associated hardware description languages and CAD tools; embedded system internetworking; real time design constraints; case studies and laboratory exercises in communications and industrial control applications.

ELEC 5616 **Computer and Network Security**
6 credit points. B E, M E S, M E S (Net Eng), M E S (Wireless Eng), UG Study Abroad Program. **Session:** Semester 1. **Classes:** 2 hours of lectures and a 2 hour lab/tutorial per week. **Assumed Knowledge:** ELEC3607 Embedded Computing (or ELEC2601 Microprocesor Systems) or ELEC3506 Data Communications and the Internet (or ELEC3504 Data Communications and the Internet) or EBUS3004 E-Business Programming (or EBUS3002 E-Commerce Website Programming). **Prohibitions:** ELEC5611 Computer and Network Security, NETS3016 Computer and Network Security, NETS3916 Computer and Network Security (Adv).. **Assessment:** Lab 20%, tutorial 5%, project 15%, end of semester exam 60%.
This unit examines the basic cryptographic building blocks of security, working through to their applications in authentication, key exchange, secret and public key encryption, digital signatures, protocols and systems. It then considers these applications in the real world, including models for integrity, authentication, electronic cash, viruses, firewalls, electronic voting, risk assessment, secure web browsers and electronic warfare. Practical cryptosystems are analysed with regard to the assumptions with which they were designed, their limitations, failure modes and ultimately why most end up broken.

INFO 4990 **IT Research Methods**
6 credit points. B C S T (Hons), B IT (Hons), B Sc (Hons), M Inf Tech Man. **Session:** Semester 1, Semester 2. **Classes:** 3 hrs/wk scheduled small-group class, plus 9 hrs/wk private work (including interaction with research supervisor). **Assumed Knowledge:** Elementary statistics. **Assessment:** Written papers (critical evaluation of a research paper, literature survey, research plan, thesis structure) and oral presentation.
NB: Department permission required for enrolment.
This unit forms a key foundation for the student's work on their IT-related research project within an Honours degree. It introduces the varied approaches to research common in different fields of IT, such as experimentation, simulation, prototyping/design, mathematical proof, surveys, and interpretive methods. The main focus is on understanding how research is done, and how it is evaluated. Key assessment tasks include writing a critical evaluation of a research paper from the literature, a survey of the literature within some topic, a research plan, and a presentation of a research plan. It is expected that the student would use their thesis research as the basis for this assessment, and use feedback provided in this unit to improve the work for inclusion in the final thesis.

INFO 5990 **Professional Practice in IT**
6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man. **Session:** Semester 2, Semester 1. **Classes:** 2 lee, 1 tut/wk. **Assessment:** Assignments, written exam.
This Unit of Study defines and explains the standards of knowledge of Information & Communication Technology (ICT) professionals. It covers the factors necessary for successful management of system development or enhancement projects, including managing the system life cycle, system performance evaluation, managing expectations of team members, cost effectiveness analysis, scheduling and change management. The unit also covers the issues related to the Organisational Behaviour, Interpersonal Communications, Ethics and Social implications as part of their involvement in professional practice.

INFO 5991 **IT Professional Services**
6 credit points. Grad Cert Inf Tech Man, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** INFO5990. **Assessment:** Assignments, written exam.
This unit of study builds upon and extends the standard body of Information & Communication Technology (ICT) knowledge required by IT professionals. Specifically, it covers topics related to the management of key resources in IT organisations including: people, projects, knowledge, and processes. The delivery of this unit is driven by a critical examination of selected case studies that focus on topics such as organisational capability assessment, recruitment and organisational capability development, outsourcing strategies, and IT procurement.

INFO 6007 **Project Management in IT**
6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man. **Session:** Semester 2, Semester 1. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** INFS6000. **Prohibitions:** INFS6014 IT Project Management. **Assessment:** Assignments, written exam.
This unit of study covers the factors necessary for successful management of system development or enhancement projects. Both technical and behavioural aspects of project management are discussed. Potential topics of interest could include managing the system life cycle, system and database integration issues, system performance evaluation, managing expectations of team members, cost effectiveness analysis, scheduling and change management.

HIMT 5057 **Introduction to Health Informatics**
6 credit points. Cross Inst Enrolment - Phty, Cross-Institutional - Him (Postgrad), Cross Inst Enrl Behav Sc, Grad Cert Hlth Sc (Beh Sc), Grad Cert Hlth Sc (Child&Adol Hlth), Grad Cert Hlth Sc (D D), Grad Cert Hlth Sc (Indig Comm Hlth), Grad Cert Hlth Sc (Med Sono), Grad Cert. Janelle Craig (02) 9351 9651, j.craig@fhs.usyd.edu.au. **Session:** Semester 1. **Classes:** Intensive compulsory block mode. **Assessment:** Assignments.
This unit introduces the definition of data, information and knowledge as well as what defines a system and a model. National and state information policies will be reviewed and steps in policy formulation, analysis and implementation will be covered. A central focus will be issues relating to privacy, confidentiality, security and the ethical use of health information. This will include discussion of relevant legislation.

HIMT 5058 **Health Informatics Applications**
6 credit points. Cross Inst Enrolment - Phty, Cross-Institutional - Him (Postgrad), Cross Inst Enrl Behav Sc, Grad Cert H S M, Grad Cert Hlth Sc (Beh Sc), Grad Cert Hlth Sc (Child&Adol Hlth), Grad Cert Hlth Sc (D D), Grad Cert Hlth Sc (Indig Comm Hlth), Grad Cert Hlth Sc (Me. Janelle Craig (02) 9351 9651, j.craig@fhs.usyd.edu.au. **Session:** Semester 2. **Classes:** Intensive compulsory block mode. **Assessment:** Assignments.
This unit will introduce system analysis and design concepts, including the system life cycle, scheduling tools and approaches to assessing user requirements. Relevant IT standards for the health sector, for example HL7 will be covered along with issues related to data warehousing. Health informatics applications such as imaging, smart cards, telemedicine, wireless data transmission, handheld computers, robotics, data transmission via the Internet, expert systems and decision support systems will be discussed. A focus will be the design and implementation of the electronic patient record.

HIMT 5060 **Integration of Health Informatics**
6 credit points. Cross Inst Enrolment - Phty, Cross-Institutional - Him (Postgrad), Cross Inst Enrl Behav Sc, Grad Cert Hlth Sc (Beh Sc), Grad Cert Hlth Sc (Child&Adol Hlth), Grad Cert Hlth Sc (D D), Grad Cert Hlth Sc (Indig Comm Hlth), Grad Cert Hlth Sc (Med Sono), Grad Cert. Joanne Callen (02) 9351 9558, j.callen@fhs.usyd.edu.au. **Session:** Semester 2. **Classes:** Intensive compulsory block mode. **Assessment:** Assignments.
This unit aims to provide students with management skills that are needed to ensure the successful integration of information technology into an organisation. Topics covered include decision-making, the management of change and organisational culture. The features and development of an effective learning organisation are discussed.

HIMT 5069 **Health Care Systems**
6 credit points. Cross Inst Enrolment - Phty, Cross-Institutional - Him (Postgrad), Cross Inst Enrl Behav Sc, Grad Cert Hlth Sc (Beh Sc), Grad Cert Hlth Sc (Child&Adol Hlth), Grad Cert Hlth Sc (D D), Grad Cert Hlth Sc (Indig Comm Hlth), Grad Cert Hlth Sc (Med Sono), Grad Cert. Janelle Craig/Prof Beth Reid (02) 9351 9494, j.craig@fhs.usyd.edu.au/b.reid@fhs.usyd.edu.au. **Session:** Semester 1. **Classes:** Intensive compulsory block mode. **Assessment:** Assignments and examinations.
This unit provides an introduction to the Australian health care system. Topics covered include Commonwealth and State responsibilities for health with a particular focus on funding issues, healthcare expenditure, the structure and organisation of health insurance, health care facilities and the health workforce. The unit encourages a critical appraisal of current health arrangements and policies and an appreciation of the pluralistic nature of the health system. Students will participate in the Health Care Game, an interactive web-based program, as part of the unit.

INFS 6001 **BIS Management**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip Com, Grad Dip IT, M B I S, M Com, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 3 hours per week. **Corequisites:** INFS6000. **Assessment:** Group assignments; Mid-semester exam; Final exam.
This unit introduces you to the organisational foundations of information systems and their emerging strategic role. You will develop an understanding of real-world systems and their relationship to organisations, management and business processes. The unit provides you with a solid understanding of the technology underlying information systems and how various information technologies work together to create infrastructure for electronic commerce and electronic business. You will explore the role of information systems in capturing and distributing organisational knowledge and in enhancing management decision making. Finally, you will have the opportunity to explore the special management challenges and opportunities created by the pervasiveness and power of information systems.

INFS 6002 **BIS Strategy**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M B I S, M Com, PG Coursework Exchange. **Session:** Semester 2. **Classes:** 3 hours per week. **Prerequisites:** INFS6000. **Assessment:** Class participation, Examination, Individual assignments and Group projects.
In this unit, you will explore current issues and theoretical concepts in information technology strategy and management. A key aim of the unit is to provide you with a detailed understanding of concepts, tools and methodologies that can be of assistance to organisations in their design, implementation and enactment of IT strategies and governance of value-adding IT resources. The focus will be on users and IT strategy and management in context rather than on more technical aspects. Your understanding will be enhanced through active participation in case studies, which are an essential element of the unit.

INFS 6004 **BIS Change Management**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M Com, PG Coursework Exchange. **Session:** Semester 1. **Classes:** 3 hours per week.
This unit aims to equip students with an ability to operate as a change agent in the IT industry with an appropriate sensitivity to the needs of the client and their own role in the change process. The learning objectives are to understand: the context and roles of change; the applicability of various change techniques and the role of information technology in each; practical issues in the management of client selection, relationships and contract management; and how to apply all these concepts to the activity of consulting in the IT industry.

INFS 6012 **Business Process Integration**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M B I S, M Com, PG Coursework Exchange. **Session:** Semester 1. **Classes:** 3 hours per week. **Prerequisites:** INFS6000.
This unit will provide you with an overview of integrated enterprise systems using packaged software solutions (via the SAP R/3 enterprise resource planning system). It offers practical experience in using the SAP R/3 system so as to familiarize you with all the modules and their functionality. You will learn how enterprise resource planning integrates functions within business and you will gain a thorough understanding of the information flows in procurement, production planning, production control, inventory control, sales and distribution, financial accounting and cost controlling.

INFS 6013 **Risk Management and BIS Assurance**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M B I S, M Com, PG Coursework Exchange. **Session:** Semester 1. **Classes:** 3 hours per week. **Prerequisites:** INFS6000.
This unit will introduce you to the concepts and practices relating to the protection and assurance of business information systems. Business information and information related systems are valuable assets to organisations and are of critical importance in meeting regulatory obligations. Therefore the risk of disruption, theft or destruction to information systems has business value and compliance implications. This unit provides you with the opportunity to investigate key concepts, strategies and methodologies that will assist you in identifying, analysing and evaluating potential risk areas and critical control needs throughout the information system lifecycle. Your knowledge will be expanded in a multi-level approach that examines tools and technologies for safeguarding business information resources, the key stakeholders and institutional arrangements for business information systems assurance. The theoretical and conceptual material covered in seminars is reinforced through problem based learning.

INFS 6014 **BIS Project Management**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M B I S, M Com, PG Coursework Exchange. **Session:** Semester 2. **Classes:** 3 hours per week. **Corequisites:** INFS6000.
This unit will introduce you to the end to end project management lifecycle from project planning and initiation through implementation to benefits realisation. You will be exposed to both the technical and behavioural aspects of project management infrastructures, techniques and methodologies - including PMBOK, PRINCE2 and OPM3. You will be introduced to concepts and will critically analyse their application in specific project contexts. In addition you will learn how to use the standard project management tool Microsoft Project. Major topics covered in the unit include project plan development, execution and control along with consideration of the change management implications of the project for its host organisation.

INFS 6015 **Business Process Management**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M B I S, M Com, PG Coursework Exchange. **Session:** Semester 2. **Classes:** 3 hours per week. **Assumed Knowledge:** INFS6012. **Prerequisites:** INFS6000. **Assessment:** Individual assignment; Group assignment; mid-semester exam; final exam.
This unit will introduce you to concepts of Business Process Management (BPM) and capabilities to discover, analyse, design, deploy and optimize end to end business processes. You will obtain a detailed understanding of strategies, methods, tools and technologies associated with BPM. You will also develop practical skills by modelling and re-designing business processes using commercial software. Business processes that stretch across organizational boundaries and the management of such processes are the central themes of this unit.

INFS 6016 **Internet Business Models and Strategies**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, M B I S, M Com, M E S (Manuf Com Bus Man), PG Coursework Exchange. **Session:** Semester 2. **Classes:** 3 hours per week. **Corequisites:** INFS6000.
This unit will assist you to develop knowledge and skills in Electronic Commerce business models and strategies from a management perspective. It will enable you to better understand and apply the concepts, strategies, tools and technologies necessary for undertaking business over the Internet. From basic knowledge of business models and essential business processes this unit will increase your awareness and understanding of stakeholders, their capabilities and their limitations in the strategic convergence of technology and business. It will increase your insights into the technology and infrastructure required to support Internet commerce and will support development of your capabilities to analyse and to evaluate business strategies and models.

INFS 6017 **Strategic Information Design & Mgmt**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M B I S, M Com, PG Coursework Exchange. **Session:** Semester 2. **Classes:** 3 hours per week. **Prerequisites:** INFS6000.
In this unit you will be exposed to a sociotechnical change perspective to the study of information, content and knowledge management. The unit provides you with the opportunity to investigate the systems that enable the acquisition, storage and distribution of business and government information. The major emphasis is on the ways that

organisations generate, communicate and leverage value from their information and knowledge assets. Different views of information such as "information as evidence" and "information as asset" will be presented, and you will explore the tensions arising from the interplay of these two views. Your knowledge will be expanded in a multi-level approach that examines digital information products, information users and institutional arrangements for information and knowledge management.

MATH 4431 **Advanced Option Pricing**
6 credit points. B Sc (Hons), Grad Dip Sc, PG Coursework Exchange, Science PG Non-Degree. **Session:** Semester 1. **Classes:** Lectures/tutorials : 3 hrs per week in total. **Assumed Knowledge:** BSc in mathematics or equivalent, and familiarity with financial concepts such as arbitrage, options, and the basics of Black-Scholes option-pricing methodology. **Assessment:** 60% from final exam, 40% from two assignments.
An important and large part of modern quantitative finance is concerned with the valuation of derivative securities including not only vanilla calls and puts but also the vast family of exotic options. The latter includes barrier options, lookback options, compound options, American options, Asian options, rainbow options, credit derivatives and many others.

This unit develops a none-too-technical mathematical framework for obtaining the fair or arbitrage-free prices of such derivative securities. This framework includes the two main approaches in popular use: the risk-neutral expectations method and the corresponding PDE method. Students will be introduced to the necessary stochastic calculus methods that underlie both approaches. Some computational methods employed in industry will also be discussed.

While a good understanding of mathematical statistics and PDE's would be an advantage, the unit assumes neither. Thus students and practitioners with strong analytical skills will still benefit from this unit, considered by some as the most advanced academic program of its kind in the country.

MATH 4433 **Interest Rate Modelling**
6 credit points. B Sc (Hons), Grad Dip Sc, PG Coursework Exchange, Science PG Non-Degree. **Session:** Semester 2. **Classes:** Lectures/tutorials : 3 hrs per week in total. **Assumed Knowledge:** BSc in mathematics or equivalent, and familiarity with financial concepts such as arbitrage, options, and the basics of Black-Scholes option-pricing methodology, as well as the essentials of the stochastic calculus, and familiarity with mathematical computing. **Assessment:** 60% from final exam, 40% from two assignments.
Interest rate derivatives such as forwards, bond options, swaps, swaptions, caps and floors are extensively traded in financial markets around the world. Consequently, the modelling of interest rates and the pricing of interest rate derivatives are matters of considerable importance in the finance industry.

This unit will begin with a review of riskless term-structure models, and then introduce various stochastic spot-rate and yield curve models, including those of Merton, Vasicek, Cox-Ingersoll-Ross, Ho-Lee, Hull-White, Black-Derman-Toy, and Black-Karacynsky. The final part of the course will be on forward rate models of the kind arising in theHeath-Jarrow-Morton framework, and including the so-called "market models" (such as that of Brace-Gatarek-Musiela). Recurring themes will be the central risk-neutral measure and the forward measure, and their roles in the pricing of forwards, swaps, caps, bond options, caps and floors.

Some familiarity with stochastic calculus and its relevance to the derivative pricing is assumed, although a brief review of this material will be included. A degree of familiarity with MATLAB is also highly desirable, as one of the assignments will involve some computational work.

IT project units
COMP 5702 **IT Research Project A**
12 credit points. M AIT, M Inf Tech, M Inf Tech Man. **Session:** Semester 1, Semester 2. **Classes:** 8 prac/wk. **Assessment:** Report.
NB: Department permission required for enrolment.
Specialist/Elective/Proj ect

COMP 5703 **Information Technology Project**
12 credit points. Grad Cert Inf Tech Man, M AIT, M Inf Tech. **Session:** Semester 1, Semester 2. **Classes:** 8 prac/wk. **Assessment:** Report.
NB: Department permission required for enrolment.
Specialist/Elective/Proj ect

COMP 5704 **IT Research Project B**
6 credit points. M AIT, M Inf Tech, M Inf Tech Man. **Session:** Semester 1, Semester 2. **Classes:** 4 prac/wk. **Assessment:** Report.
NB: Department permission required for enrolment.
Specialist/Elective/Project

Applied Information Technology

Graduate Certificate in Applied Information Technology
Graduate Diploma in Applied Information Technology
Master of Applied Information Technology

These award courses are not available to new students in 2006.

Course Overview
The University of Sydney offers planned, targeted postgraduate programs in IT to meet the demand of the applied IT industry. This articulated program includes the Graduate Certificate in Applied Information Technology, the Graduate Diploma in Applied Information Technology and the degree of Master of Applied Information Technology and is designed to provide a core of knowledge in information technology, supplemented by a broad range of options within the areas of Computer Networks and the Internet, Multimedia, Database Management and Administration, Software Engineering and Computer Science. The combination of core units and options provides an excellent retraining opportunity. Students will not only obtain depth in their knowledge of the IT industry but they will also be able to choose from a selection of options which will allow them to focus on specialisations in the broad span of the industry.

Course Outcomes
The articulated award program in Applied Information Technology is designed for graduates in other fields who wish to enter the IT industry, for graduates with expertise in another field who wish to enhance the effective use of IT within the field of their previous training, or for those already skilled as IT professionals who wish to embrace new technology.

Upon completion of the Graduate Certificate, graduates will possess a practical and theoretical background in some of the basic aspects of Information Technology. This can be supplemented and extended upon completion of the Graduate Diploma, and extended further to include research and practical skills by completion of the Masters program. Students completing the full postgraduate program will have a grounding in all basic areas of Information Technology, enabling them to follow innovations in IT, contribute to the development of IT, and make use of IT in solving various issues.

Admission Requirements
Applicants for the Graduate Certificate in Applied Information Technology should hold a Bachelor's degree in Physical Science, Engineering, or a Bachelor's degree with some background in Information Technology or Mathematics, or be persons who have worked in Information Technology for more than 8 years can offer evidence of prior learning which is considered to demonstrate the knowledge and aptitude required to undertake this course.

Applicants for the Graduate Diploma in Applied Information Technology should hold a Bachelor's degree in Physical Science or Engineering, or a Bachelor's degree with some background in Information Technology or Mathematics, or have completed the Graduate Certificate in Applied Information Technology at the University of Sydney with credit average results or above.

Applicants for the Master of Applied Information Technology should hold a Bachelor's degree in Physical Science or Engineering, or a Bachelor's degree with some background in Information Technology or Mathematics, or have completed the Graduate Diploma of Applied Information Technology at the University of Sydney with credit average results or above.

Course Requirements
Graduate Certificate in Applied Information Technology:
- A total of 36 credit points must be completed;

- A total of 24 credit points must be selected from Elementary units of study;

- At least 12 credit points should come from Foundational and Specialist units of study, excluding INFO 5990 and IT project units of study;

Graduate Diploma in Applied Information Technology:
- A total of 48 credit points must be completed;

- A total of 24 credit points must be selected from Elementary units of study;

- At least 18 credit points of Elementary units of study must be completed before students can enrol in any Foundational or Specialist unit of study;

- At least 24 credit points should come from Foundational and Specialist units of study, excluding INFO 5990 and IT project units of study;

Master of Applied Information Technology:
- A total of 72 credit points must be completed;

- A total of 24 credit points must be selected from Elementary units of study;

- A maximum of 24 credit points must be selected from Foundational units of study;

- At least 18 credit points of Elementary units of study must be completed before students can enrol in any Foundational or Specialist unit of study;

- At least 24 credit points should come from Specialist units of study or IT project units of study;

- units of study offered by the Faculties of Engineering and Economics & Business are not available for students enrolled in the Grad Cert Applied IT, Grad Dip Applied IT, or Master of Applied IT degree programs;

- Every student must complete a defined major in the Master of Applied Information Technology, which requires them to complete at least 18 credit points of Core units in the designated major;

- After completing 48 credit points of course work, students who achieve Credit average results or above in all Foundational and Specialist units of study attempted may select 12 credit points of IT project units of study among their specialist units;

- After completing 48 credit points of course work, students who have Distinction average results or above in all Foundational and Specialist units of study attempted may be eligible for the Research path subject to the approval of the Head of the School of Information Technologies and the Dean;

- Students who pursue the Research path must study INFO 4990 and select 18 credit points from IT research project units of study.

Credit for previous study
Credit is not available in the Graduate Certificate in Applied Information Technology, Graduate Diploma in Applied Information Technology and Master of Applied Information Technology for postgraduate study unless it was undertaken in these award courses within the previous three years and no award has been conferred. If an award has been conferred, credit for study in these award courses is limited to 12 credit points of the units from the other award course.

Course Resolutions: see chapter 7.

Units of study available in 2006

The units of study offered change annually.

Unit of study		Sem
Unless otherwise iindicated, all units are worth 6 credit points		
Elementary Units		
COMP5211	Algorithms	1,2
COMP 5213	Computer and Network Organisation	1,2
COMP 5206	Introduction to Information Systems	1,2
COMP 5214	Software Development in Java	1,2
Foundational units		
COMP 5114	Digital Media Fundamentals	1,2
COMP 5028	Object-Oriented Analysis and Design	1,2
COMP 5116	Internet Protocols	1,2
COMP 5138	Relational Database Management Systems	1,2
Specialist units		
COMP 5318	Knowledge, Discovery and Data Mining	1,2
COMP 5347	e-Commerce Technology	1,2
COMP 5415	Multimedia Authoring and Production	1,2
COMP 5338	Advanced Data Models	1,2
COMP 5348	Enterprise Scale Software Development	1,2
COMP 5416	Advanced Network Technologies	1,2
COMP 5425	Multimedia Storage, Retrieval & Delivery	1,2
COMP 5426	Network Based High Performance Computing	1,2
INFO 4990	IT Research Methods	1,2
INFO 5990	Professional Practice in IT	1,2
IT project units		
COMP 5702	IT Research Project A (12 cp)	1,2
COMP 5703	Information Technology Project B (12 cp)	1,2
COMP 5704	IT Research Project B	1,2

Units of study available in majors in 2006

The following majors are available in the Master of Applied Information Technology/

Majors are not defined for the Graduate Certificate or the Graduate Diploma in Applied Information Technology.

Core Units for Compi,iter Networks major	
To achieve a major in Computer Networks, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP 5416	Advanced Network Technologies
COMP 5426	Network Based High Performance Computing
COMP 5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP 5702	IT Research Project A (12 cp)
COMP 5704	IT Research Project B
(COMP 5702 + COMP 5704 = 18 cp)	

Core Units for Multimedia Technology major	
To achieve a major in Multimedia Technology, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP 5415	Multimedia Authoring and Production
COMP 5425	Multimedia Storage, Retrieval & Delivery
COMP 5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP 5702	IT Research Project A (12 cp)
COMP 5704	IT Research Project B

(COMP 5702 + COMP 5704 = 18 cp)

Core Units for Database Management Systems major	
To achieve a major in Database Management Systems, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP 5338	Advanced Data Models
COMP 5318	Knowledge, Discovery and Data Mining
COMP 5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP 5702	IT Research Project A (12 cp)
COMP 5704	IT Research Project B
(COMP 5702 + COMP 5704 = 18 cp)	

Core Units for Software Engineering major	
To achieve a major in Software Engineering, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP 5347	e-Commerce Technology
COMP 5348	Enterprise Scale Software Development
COMP 5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP 5702	IT Research Project A (12 cp)
COMP 5704	IT Research Project B
(COMP 5702 + COMP 5704 = 18 cp)	

Core Units for Computer Science major	
To achieve a major in Computer Science, a student must complete INFO5990 and 12 credit points of study units from this list. Students in the Research path must complete INFO4990 instead of INFO5990. *Unless otherwise indicated, all units are worth 6 credit points.*	
COMP 5425	Multimedia Storage, Retrieval & Delivery
COMP 5426	Network Based High Performance Computing
COMP 5318	Knowledge, Discovery and Data Mining
COMP 5348	Enterprise Scale Software Development
COMP 5703	Information Technology Project (12 cp)
Only available to the Research path:	
COMP 5702	IT Research Project A (12 cp)
COMP 5704	IT Research Project B
(COMP 5702 + COMP 5704 = 18 cp)	

Applied Information Technology units of study

For descriptions of Foundational and Specialist units and IT projects, refer to the Information Technology units of study in the preceding pages.

Elementary units

COMP 5206 **Introduction to Information Systems**
6 credit points. Grad Cert Appl IT, Grad Cert Inf Tech Man, Grad Dip Comp, M E S (Auto Manuf Sys), M E S (Manuf KI Proj Man), M Sc. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Prohibitions:** INFO5210. **Assessment:** Assignments, written exam.
This unit provides an introduction to information systems in organisations and the role of database management. It introduces the fundamentals of database management, along with the modeling and analysis that is needed for designing and implementing database solutions. The unit also introduces a database query language.
Objectives: On completion of this unit students will be able to develop an understanding of the role of information systems in organisations, and the value of data and information to organisations. Students will also develop skills in creating database solutions, capturing user requirements, and building process and data models.

COMP 5211 **Algorithms**
6 credit points. Grad Cert Appl IT, Grad Dip Comp, M Sc, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assessment:** Assignments, written exam.
The study of algorithms is a fundamental aspect of computing. This unit of study covers data structures, algorithms, and gives an overview of the main ways of thinking used in IT from simple list manipulation and data format conversion, up to shortest paths and cycle detection in graphs. Objectives: Basic concepts in data structure, algorithm, dynamic programming and program analysis. Students will gain essential knowledge in computer science.

COMP 5213 **Computer and Network Organisation**
6 credit points. Grad Cert App Sc (Bioinformatics), Grad Cert Appl IT, Grad Cert Inf Tech Man, Grad Dip Comp, M Sc, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assessment:** Assignments, written exam.
This unit of study is an overview of hardware and system infrastructure software including compilers, operating systems, device drivers, network protocols, etc. It also includes user-level Unix skills and network usability.
Objectives: On completion of this unit students will have developed an understanding of compilers, operating systems, device drivers, network protocols, Unix skills and network usability.

COMP 5214 **Software Development in Java**
6 credit points. Grad Cert App Sc (Bioinformatics), Grad Cert Appl IT, Grad Dip Comp, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assessment:** Assignments, written exam.
This unit of study introduces software development method where the main emphasis is on the careful adherence to a process. It includes design methodology, quality assurance, group work, version control, and documentation. It will suit students who do not come from a programming background but who want to learn the basics of computer software.
Objectives: This unit of study covers system analysis, design methodology, quality assurance, group collaboration, version control, software delivery and system documentation.

Information Technology Management

Graduate Certificate in Information Technology Management
Graduate Diploma in Information Technology Management
Master of Information Technology Management

Course overview

The University of Sydney offers planned, targeted postgraduate programs in IT to meet the demands of the IT industry.

For technically-skilled graduates seeking career advancement in the "management ladder" of IT organisations, the University offers a course known as the Master of Information Technology Management. In this course, a background in computing skills is assumed, but the emphasis is not on developing these technical skills. The focus of the Master of Information Technology is on a thorough and detailed understanding of the management of resources such as projects, people, knowledge, and technologies in the distinctive way needed within IT organisations. The Master of Information Technology Management is specifically designed for graduates who are currently moving along, or seeking to move along, a career path through managerial roles such as Project Manager, Program Manager, General Manager of Operations (GMO), Chief Information Officer (CIO), or Chief Technology Officer (CTO).

The Master of Information Technology Management provides a selection of postgraduate units of study covering a Core set of IT management topics. Students can also choose from a number of Elective topics to add depth or breadth to their studies. For students considering study leading to a research degree, the Master of Information Technology Management has a Research Path option that can be used to gain admission to an MSc by Research or a PhD.

The Master of Information Technology Management requires 1 year (2 semesters) of full-time study.

Note that for IT graduates seeking advanced technical studies, there is a separate articulated program of the Graduate Certificate in Information Technology, the Graduate Diploma in Information Technology, and the degree of Master of Information Technology. These programs provide an excellent opportunity for students to build upon their undergraduate IT studies and extend their technical knowledge in a wide range of IT specialisations.

Course outcomes

Upon completion of the Graduate Certificate, graduates will possess a practical and theoretical background in some of the basic aspects of Information Technology Management. This can be supplemented and extended upon completion of the Graduate Diploma, and extended further to include research and practical skills by completion of the Masters program.

Upon completion of the Master of Information Technology Management, graduates will have a sound knowledge base in several contemporary topics within Information Technology Management. They may also have the opportunity of applying this knowledge to the execution of a small research project.

The Master of Information Technology Management is designed as an industry relevant award. It has been developed under the guidelines of the Australian Computer Society (ACS), and it has been accredited by the ACS as a Professional level course in information technology.

Admission requirements

Applicants for the Graduate Certificate in Information Technology Management should hold a Bachelors degree; or be able to offer evidence of recognised prior learning which is considered to demonstrate the knowledge and aptitude required to undertake this course.

Applicants for the Graduate Diploma in Information Technology Management should hold a Bachelors degree; or have completed the Graduate Certificate in Information Technology Management at the University of Sydney with credit average results or above.

Applicants for the Master of Information Technology Management should hold a Bachelors degree with credit average results or better; or have completed the Graduate Diploma in Information Technology Management at the University of Sydney with credit average results or above; or have completed the Graduate Diploma in Computing at the University of Sydney.

For all applicants of the Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management, and Master of Information Technology Management the Bachelor's degree does not have to be an Information Technology degree, but it should contain a significant amount of technical subjects related to computing, as typically found in an IT, Science, or Engineering degree. Applicants holding a Bachelors degree in other areas, such as Finance, Commerce, Health Sciences, and Social Sciences, who have completed relevant IT subjects will also be eligible. Applicants holding a Bachelor's degree in any discipline and who have worked in Information Technology for more than 5 years are eligible.

Course requirements

Graduate Certificate in Information Technology Management:

- A total of 24 credit points must be completed;
- Credit points must be selected from Core units of study, excluding IT Research Project units of study;
- INFO5990 Professional Practice in IT must be completed as a Core unit of study.

Graduate Diploma in Information Technology Management:

- A total of 36 credit points must be completed;
- At least 30 credit points must come from Core units of study, excluding IT Research Project units of study;
- INFO5990 Professional Practice in IT must be completed as a Core unit of study;
- INF05991 IT Professional Services must be completed as a Core unit of study;
- A maximum of 6 credit points of Elective units of study can be taken.

Master of Information Technology Management:

- A total of 48 credit points must be completed;
- At least 30 credit points must come from Core units of study;
- INFO5990 Professional Practice in IT must be completed as a Core unit of study;
- INF05991 IT Professional Services must be completed as a Core unit of study;
- INF05992 Understanding IT Innovations must be completed as a Core unit of study;
- A maximum of 18 credit points of Elective units of study can be taken;
- After completing 24 credit points of coursework, students who achieve Credit average results or above in their coursework may select 12 credit points of Information Technology Project units of study among their Core units;
- After completing 24 credit points of coursework, students who have Distinction average results or above may be eligible for the Research Path subject to the approval of the Head of the School of Information Technologies and the Dean;
- Students who pursue the Research Path must study INFO4990 Research Methods, and select 18 credit points from IT Research Project units of study among their Core units;
- Students who pursue the Research Path do not have to take INF05991 IT Professional Services and INF05992 Understanding IT Innovations as Core units of study.

Credit for previous study

Credit is only available in the Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management and Master of Information Technology Management for postgraduate study which has been undertaken in these award courses within the previous three years and for which no award has been conferred. If an award has been conferred, credit for study in these award courses is limited to 12 credit points.

Course Resolutions: see chapter 7.

Units of study available in 2006

The units of study offered may change annually.

All INFS-coded units of study have the Core unit INFS6000 as assumed knowledge.

Inclusion of a COMP-coded Project unit of study is subject to conditions identified in the Course Requirements.

INFO6007 and INFS6014 are mutually exclusive, and students can take only one of these two units of study.

Unless otherwise indicated, all units are worth 6 credit points.

Unit code	Unit name	Semester
Core units (Mandatory)		
INFO 5990	Professional Practice in IT	1,2
INF05991	IT Professional Services	2
INF05992	Understanding IT Innovations	2
Core units (Additional)		
COMP 5206	Introduction to Information Systems	1,2
COMP 5028	Object Oriented Analysis and Design	1,2
COMP 5138	Relational Database Management Systems	1,2
COMP 5703	Information Technology Project (12 cp)	1,2
INFO6007	Project Management in IT	1,2
Coreunits (Research Path)		
INFO 4990	Research Methods	1,2
COMP 5702 IT	Research Project A (12 cp)	1,2
COMP 5704 IT	Research Project B	1,2
Elective units		
COMP 5213	Computer and Network Organisation	1,2
COMP 5114	Digital Media Fundamentals	1,2
COMP 5116	Internet Protocols	1,2
ECON 6004	Regulating e-Business	1
INFS6000	Business Information Systems	1,2
INFS6001	BIS Management	1,2
INFS6002	BIS Strategy	2

INFS6004	BIS Change Management	1
INFS6012	Business Process Integration	1
INFS6013	Risk Management & BIS Assurance	2
INFS6014	BIS Project Management	2
INFS6015	Business Process Management	2
INFS6016	Internet Business Models & Strategies	1,2
INFS6017	Strategic Information Design & Management	1
WORK6003	People, Management and Technology	1
WORK6026	Organisational Change and Development	2

Information Technology Management Units of Study

Core units of study

INFO 5990 **Professional Practice in IT**
6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man. **Session:** Semester 2, Semester 1. **Classes:** 2 lee, 1 tut/wk. **Assessment:** Assignments, written exam.
This Unit of Study defines and explains the standards of knowledge of Information & Communication Technology (ICT) professionals. It covers the factors necessary for successful management of system development or enhancement projects, including managing the system life cycle, system performance evaluation, managing expectations of team members, cost effectiveness analysis, scheduling and change management. The unit also covers the issues related to the Organisational Behaviour, Interpersonal Communications, Ethics and Social implications as part of their involvement in professional practice.

INFO 5991 **IT Professional Services**
6 credit points. Grad Cert Inf Tech Man, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** INFO5990. **Assessment:** Assignments, written exam.
This unit of study builds upon and extends the standard body of Information & Communication Technology (ICT) knowledge required by IT professionals. Specifically, it covers topics related to the management of key resources in IT organisations including: people, projects, knowledge, and processes. The delivery of this unit is driven by a critical examination of selected case studies that focus on topics such as organisational capability assessment, recruitment and organisational capability development, outsourcing strategies, and IT procurement.

INFO 5992 **Understanding IT Innovations**
6 credit points. Grad Cert Inf Tech Man, PG Coursework Exchange. **Session:** Semester 2, Semester 1. **Classes:** 3 tut/wk. **Assumed Knowledge:** INFO5990. **Assessment:** Assignments.
An essential skill for an IT manager is the ability to keep up-to-date with emerging technologies, and be able to evaluate the significance of these technologies to their organisation's business activities. This unit of study is based around a study of current technologies and the influence of these technologies on business strategies. On completion of this unit, sutdents will be able to identify and analyse an emerging technology and write a detailed evaluation of the impact of this technology on existing business practices.

COMP 5028 **Object-Oriented Analysis and Design**
6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip Comp, PG Summer/Winter School. **Session:** Semester 1, Semester 2, Summer. **Classes:** 2 lee & 1 tut/wk. **Assessment:** Assignments, written exam.
This unit introduces Object-Oriented Analysis and Design especially the principles of modelling through Rational Unified Process and agile processes using Unified Modeling Language (UML), both of which are industry standard. Students work in small groups to experience the process of object-oriented analysis, architectural design, object-oriented design, implementation and testing by building a real-world application.
Objectives: In this unit students will develop the ability to:
- identify how the system interacts with its environment;
- identify appropriate objects and their attributes and methods;
- identify the relationships between objects;
- write the interfaces of each object and exception handling;
- implement and test the objects;
- read and write various UML diagrams (use case, activity, class, object, sequence, collaboration, state chart, component and deployment diagrams).

COMP 5206 **Introduction to Information Systems**
6 credit points. Grad Cert Appl IT, Grad Cert Inf Tech Man, Grad Dip Comp, M E S (Auto Manuf Sys), M E S (Manuf KI Proj Man), M Sc. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Prohibitions:** INFO5210. **Assessment:** Assignments, written exam.
This unit provides an introduction to information systems in organisations and the role of database management. It introduces the fundamentals of database management, along with the modeling and analysis that is needed for designing and implementing database solutions. The unit also introduces a database query language.
Objectives: On completion of this unit students will be able to develop an understanding of the role of information systems in organisations, and the value of data and information to organisations. Students will also develop skills in creating database solutions, capturing user requirements, and building process and data models.

COMP 5318 **Knowledge, Discovery and Data Mining**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT, Grad Dip App Sc (M B T), PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assumed Knowledge:** COMP5138 Relational Database Management Systems. **Assessment:** Assignments, written exam.
Knowledge discovery is the process of extracting useful knowledge from data. Data mining is a discipline within knowledge discovery that seeks to facilitate the exploration and analysis of large quantities of data, by automatic or semiautomatic means. This subject provides a practical and technical introduction to knowledge discovery and data mining.
Objectives: Topics to be covered include problems of data analysis in databases, discovering patterns in the data, and knowledge interpretation, extraction and visualisation. Also covered are analysis, comparison and usage of various types of machine learning techniques and statistical techniques: clustering, classification, prediction, estimation, affinity grouping, description and scientific visualisation.

INFO 6007 **Project Management in IT**
6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man. **Session:** Semester 2, Semester 1. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** INFS6000. **Prohibitions:** INFS6014 IT Project Management. **Assessment:** Assignments, written exam.
This unit of study covers the factors necessary for successful management of system development or enhancement projects. Both technical and behavioural aspects of project management are discussed. Potential topics of interest could include managing the system life cycle, system and database integration issues, system performance evaluation, managing expectations of team members, cost effectiveness analysis, scheduling and change management.

Core Research Path Units of Study

INFO 4990 **IT Research Methods**
6 credit points. B C S T (Hons), B IT (Hons), B Sc (Hons), M Inf Tech Man. **Session:** Semester 1, Semester 2. **Classes:** 3 hrs/wk scheduled small-group class, plus 9 hrs/wk private work (including interaction with research supervisor). **Assumed Knowledge:** Elementary statistics. **Assessment:** Written papers (critical evaluation of a research paper, literature survey, research plan, thesis structure) and oral presentation.
NB: Department permission required for enrolment.
This unit forms a key foundation for the student's work on their IT-related research project within an Honours degree. It introduces the varied approaches to research common in different fields of IT, such as experimentation, simulation, prototyping/design, mathematical proof, surveys, and interpretive methods. The main focus is on understanding how research is done, and how it is evaluated. Key assessment tasks include writing a critical evaluation of a research paper from the literature, a survey of the literature within some topic, a research plan, and a presentation of a research plan. It is expected that the student would use their thesis research as the basis for this assessment, and use feedback provided in this unit to improve the work for inclusion in the final thesis.

COMP 5702 **IT Research Project A**
12 credit points. M A1T, M Inf Tech, M Inf Tech Man. **Session:** Semester 1, Semester 2. **Classes:** 8 prac/wk. **Assessment:** Report.
NB: Department permission required for enrolment.
Specialist/Elective/Project

COMP 5704 **IT Research Project B**
6 credit points. M A1T, M Inf Tech, M Inf Tech Man. **Session:** Semester 1, Semester 2. **Classes:** 4 prac/wk. **Assessment:** Report.
NB: Department permission required for enrolment.
Specialist/Elective/Project

Elective Units of Study

COMP 5213 **Computer and Network Organisation**
6 credit points. Grad Cert App Sc (Bioinformatics), Grad Cert Appl IT, Grad Cert Inf Tech Man, Grad Dip Comp, M Sc, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assessment:** Assignments, written exam.

This unit of study is an overview of hardware and system infrastructure software including compilers, operating systems, device drivers, network protocols, etc. It also includes user-level Unix skills and network usability.
Objectives: On completion of this unit students will have developed an understanding of compilers, operating systems, device drivers, network protocols, Unix skills and network usability.

COMP 5114 **Digital Media Fundamentals**
6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip Comp, M E S (Auto Manuf Sys), PG CourseworkExchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Assessment:** Assignments, written exam.
This unit provides an overview of processing digital media which include text, audio, pictorial data and video. It introduces various processing techniques and standards, and presents some applications.
Objectives: The unit covers Multimedia Primer; Text Processing which includes text parsing, text summarization, text manipulation, text index and retrieval, and surrogate coding; Audio Data Processing which includes audio attribute, audio masking, MP3 audio, audio manipulation and audio segmentation; pictorial data processing which includes still image processing, multi-modal image processing and artificial image processing; video data processing which includes active image processing, video segmentation, motion analysis, moving object extraction, video representation and codification.

COMP 5116 **Internet Protocols**
6 credit points. Grad Cert Appl IT, Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip Comp, M E S (Net Eng), PG Summer/Winter School. **Session:** Semester 1, Semester 2, Summer. **Classes:** 2 lectures and 1 tutorial/week. **Assessment:** Assignments, written examination.
In this unit students will develop the ability to gain in depth knowledge of the structure and algorithms used in the TCP/IP networking protocols that make up the foundation of the Internet. Furthermore, the unit will provide students with the architectural insight to being able to design and analyse protocols in the perspective of their intended use.
Objectives: On completion of this unit students will develop an understanding on the layered model, the core protocols, the routing protocols, the link layer and the various tools for traffic and protocol analysis.

ECON 6004 **Regulating e-Business**
6 credit points. Grad Cert Inf Tech Man, M Bus, M Com, M Ec, M Int Bus, PG Coursework Exchange. **Session:** Semester 1. **Classes:** 3 hours which may include one or more of the following: lectures, seminars, tutorials, or workshops. **Assessment:** Three-hr exam; Group project; In-class exercise; Peer assessed participation.
The growth of e-business has been accompanied by calls for governments to act on behalf of existing businesses, workers, consumers, and marginal groups. There are dangers from the threats from disruption by unauthorised or malicious intervention, from the harmful effects of global monopolies, from the possibilities for tax evasion, from the danger of invaded privacy, and from inappropriate, immoral, or illegal activity. Governments in the United States, Europe, Asia, and Australia have adopted very different approaches to these issues. Managers need to be aware of legal structures and commercial regulations as well as the development and delivery of e-business solutions, and their responses need to adjust to achieve their firm's goals.

INFS 6000 **Business Information Systems**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, M B I S, M Com, M E S (Manuf Com Bus Man), PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 3 hours per week.
The objective is to help you understand (i) using data to meet organizational objectives and expected outcomes, ii) the complex and changing information environment from the perspective of stakeholders, and (hi) the management issues associated with making effective use of the combined capabilities of technology and employee knowledge. These are explored with reference to enterprise-wide systems as well as small to medium systems in business and government. Understanding is fostered through presenting conceptual frameworks, analytical tools and research findings from over 30 years in business information systems. Four themes are referenced during the unit: data and data structures as a corporate resource; core business processes within business cycles; ethics and socio-technical issues in BIS, and, information and knowledge for business intelligence and decisions by managers.

INFS 6001 **BIS Management**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip Com, Grad Dip IT, M B I S, M Com, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 3 hours per week. **Corequisites:** FNFS6000. **Assessment:** Group assignments; Mid-semester exam; Final exam.
This unit introduces you to the organisational foundations of information systems and their emerging strategic role. You will develop an understanding of real-world systems and their relationship to organisations, management and business processes. The unit provides you with a solid understanding of the technology underlying information systems and how various information technologies work together to create infrastructure for electronic commerce and electronic business. You will explore the role of information systems in capturing and distributing organisational knowledge and in enhancing management decision making. Finally, you will have the opportunity to explore the special management challenges and opportunities created by the pervasiveness and power of information systems.

INFS 6002 **BIS Strategy**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M B I S, M Com, PG Coursework Exchange. **Session:** Semester 2. **Classes:** 3 hours per week. **Prerequisites:** INFS6000. **Assessment:** Class participation, Examination, Individual assignments and Group projects.
In this unit, you will explore current issues and theoretical concepts in information technology strategy and management. A key aim of the unit is to provide you with a detailed understanding of concepts, tools and methodologies that can be of assistance to organisations in their design, implementation and enactment of IT strategies and governance of value-adding IT resources. The focus will be on users and IT strategy and management in context rather than on more technical aspects. Your understanding will be enhanced through active participation in case studies, which are an essential element of the unit.

INFS 6004 **BIS Change Management**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M Com, PG Coursework Exchange. **Session:** Semester 1. **Classes:** 3 hours per week.
This unit aims to equip students with an ability to operate as a change agent in the IT industry with an appropriate sensitivity to the needs of the client and their own role in the change process. The learning objectives are to understand: the context and roles of change; the applicability of various change techniques and the role of information technology in each; practical issues in the management of client selection, relationships and contract management; and how to apply all these concepts to the activity of consulting in the IT industry.

INFS 6012 **Business Process Integration**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M B I S, M Com, PG Coursework Exchange. **Session:** Semester 1. **Classes:** 3 hours per week. **Prerequisites:** INFS6000.
This unit will provide you with an overview of integrated enterprise systems using packaged software solutions (via the SAP R/3 enterprise resource planning system). It offers practical experience in using the SAP R/3 system so as to familiarize you with all the modules and their functionality. You will learn how enterprise resource planning integrates functions within business and you will gain a thorough understanding of the information flows in procurement, production planning, production control, inventory control, sales and distribution, financial accounting and cost controlling.

INFS 6013 **Risk Management and BIS Assurance**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M B I S, M Com, PG Coursework Exchange. **Session:** Semester 1. **Classes:** 3 hours per week. **Prerequisites:** INFS6000.
This unit will introduce you to the concepts and practices relating to the protection and assurance of business information systems. Business information and information related systems are valuable assets to organisations and are of critical importance in meeting regulatory obligations. Therefore the risk of disruption, theft or destruction to information systems has business value and compliance implications. This unit provides you with the opportunity to investigate key concepts, strategies and methodologies that will assist you in identifying, analysing and evaluating potential risk areas and critical control needs throughout the information system lifecycle. Your knowledge will be expanded in a multi-level approach that examines tools and technologies for safeguarding business information resources, the key stakeholders and institutional arrangements for business information systems assurance. The theoretical and conceptual material covered in seminars is reinforced through problem based learning.

INFS 6014 **BIS Project Management**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M B I S, M Com, PG Coursework Exchange. **Session:** Semester 2. **Classes:** 3 hours per week. **Corequisites:** FNFS6000.
This unit will introduce you to the end to end project management lifecycle from project planning and initiation through implementation to benefits realisation. You will be exposed to both the technical and

behavioural aspects of project management infrastructures, techniques and methodologies - including PMBOK, PRINCE2 and OPM3. You will be introduced to concepts and will critically analyse their application in specific project contexts. In addition you will learn how to use the standard project management tool Microsoft Project. Major topics covered in the unit include project plan development, execution and control along with consideration of the change management implications of the project for its host organisation.

INFS 6015 **Business Process Management**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M B IS, M Com, PG Coursework Exchange. **Session:** Semester 2. **Classes:** 3 hours per week. **Assumed Knowledge:** INFS6012. **Prerequisites:** INFS6000. **Assessment:** Individual assignment; Group assignment; mid-semester exam; final exam.
This unit will introduce you to concepts of Business Process Management (BPM) and capabilities to discover, analyse, design, deploy and optimize end to end business processes. You will obtain a detailed understanding of strategies, methods, tools and technologies associated with BPM. You will also develop practical skills by modelling and re-designing business processes using commercial software. Business processes that stretch across organizational boundaries and the management of such processes are the central themes of this unit.

INFS 6016 **Internet Business Models and Strategies**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, M B IS, M Com, M E S (Manuf Com Bus Man), PG Coursework Exchange. **Session:** Semester 2. **Classes:** 3 hours per week. **Corequisites:** INFS6000.
This unit will assist you to develop knowledge and skills in Electronic Commerce business models and strategies from a management perspective. It will enable you to better understand and apply the concepts, strategies, tools and technologies necessary for undertaking business over the Internet. From basic knowledge of business models and essential business processes this unit will increase your awareness and understanding of stakeholders, their capabilities and their limitations in the strategic convergence of technology and business. It will increase your insights into the technology and infrastructure required to support Internet commerce and will support development of your capabilities to analyse and to evaluate business strategies and models.

INFS 6017 **Strategic Information Design & Mgmt**
6 credit points. Grad Cert IT, Grad Cert Inf Tech Man, Grad Dip IT, M B IS, M Com, PG Coursework Exchange. **Session:** Semester 2. **Classes:** 3 hours per week. **Prerequisites:** INFS6000.
In this unit you will be exposed to a sociotechnical change perspective to the study of information, content and knowledge management. The unit provides you with the opportunity to investigate the systems that enable the acquisition, storage and distribution of business and government information. The major emphasis is on the ways that organisations generate, communicate and leverage value from their information and knowledge assets. Different views of information such as "information as evidence" and "information as asset" will be presented, and you will explore the tensions arising from the interplay of these two views. Your knowledge will be expanded in a multi-level approach that examines digital information products, information users and institutional arrangements for information and knowledge management.

WORK 6003 **People, Management and Technology**
6 credit points. Grad Cert Bus, Grad Cert H R M Coaching, Grad Cert Inf Tech Man, M Com, M L L R, PG Coursework Exchange. **Session:** Semester 1. **Assessment:** Continuous: Essays, case studies and/or exam.
This unit analyses the interaction of technology, organisations and work and highlights the importance of the human element in managing technology. Design, acquisition and utilisation of technology are examined as distinct yet complimentary phases in the strategic management of technology. The unit also expands into strategic and macro level issues.

WORK 6026 **Organisational Change and Development**
6 credit points. Grad Cert Bus, Grad Cert H R M Coaching, Grad Cert Inf Tech Man, Grad Dip Org Coaching, M Com, M L L R, PG Coursework Exchange. **Session:** Semester 1. **Assessment:** Continuous: Essay and exam.
This unit seeks to develop diagnostic and prescriptive skills in relation to the management of organisational change while also encouraging the adoption of a critical perspective of the field. Part 1 (Organisational Change and the Nature of Organisations) introduces the fields of organisational change, explains its relevance to organisation performance and strategy and examines key change management models. Part 2 (Diagnosis and Intervention) examines the utility of key organisational change models and techniques and identifies factors that may impact on the effectiveness of the change management process. Part 3 (Key Areas of Intervention) analyses the application of organisational change practices and initiatives to a number of specific organisational issues.

Medical Physics

Graduate Diploma in Medical Physics
Master of Medical Physics

Course overview
The Master of Medical Physics (MMedPhys) and the Graduate Diploma in Medical Physics (GradDipMedPhys) are the entry level qualifications required by medical physicists. Medical physicists are physical scientists who apply their knowledge and training in many different areas of medicine including the treatment of cancer, medical imaging, physiological monitoring and medical electronics.

Course outcomes
The MMedPhys and GradDipMedPhys provide the entry level qualification for trainee medical physicists working in a hospital medical physics department. Both courses are accredited by the Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM). Graduates of these courses will qualify to apply for trainee medical physicist positions in hospitals in Australia and New Zealand. Medical physicists employed in hospitals often undertake research studies for the higher Doctor of Philosophy (PhD) research degree.

Admission requirements
A graduate with a major in physics (i.e. three undergraduate years of Physics) or equivalent (such as an appropriate engineering degree).

Course requirements
Graduate Diploma in Medical Physics
48 credit points, consisting of eight core units of study, each of 6 credit points.
Master of Medical Physics
72 credit points, consisting of the 48 credit points of the Graduate Diploma plus a 24 credit point project.

Credit for previous study
Credit is not available in the Graduate Diploma in Medical Physics and Master of Medical Physics for postgraduate study which has not been undertaken within these award courses within the previous three years, except at the discretion of the Dean. A candidate who has qualified for the award of the Graduate Diploma in Medical Physics may transfer, within three years, to the Master of Medical Physics and receive credit for up to 48 credit points from the Graduate Diploma in Medical Physics.
Course Resolutions: see chapter 7.

Unit of study		Credit points
All units are core. Unless otherwise indicated all units are worth 6 credit points		
PHYS 5001	Radiation Physics	6
PHYS 5002	Anatomy and Physiology	6
PHYS 5003	Instrumentation	6
PHYS 5004	Radiation Dosimetry	6
PHYS 5005	Radiotherapy Physics	6
PHYS 5006	Medical Imaging Physics	6
PHYS 5007	Image Processing	3
PHYS 5008	Radiation Biology and Health Physics	6
PHYS 5009	Research Methodology	3
PHYS 5010	Project	24

PHYS 5001 **Radiation Physics**
6 credit points. Grad Dip Med Phys, M Med Phys. **Session:** Semester 1. **Classes:** 2 lec/wk, 1 prac/wk. **Assessment:** assignments, written exam.
In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the production of ionising radiation and its fundamental interactions with matter and related factors are covered.

PHYS 5002 **Anatomy and Physiology**
6 credit points. Grad Dip Med Phys, M Med Phys. **Session:** Semester 1. **Classes:** 2 lec/wk, 1 prac/wk. **Assessment:** assignments, written exam.
In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the concepts of the structure of the human cell and tissues are introduced. The organisation and function of each of the major organ systems that constitute the human body are covered. Example of pathology of diseases commonly encountered in the practice of medical physics will be included.

PHYS 5003 **Instrumentation**
6 credit points. Grad Dip Med Phys, M Med Phys. **Session:** Semester 1. **Classes:** 2 lec/wk, 1 prac/wk. **Assessment:** assignments, written exam.
In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the principles underlying the fundamental operation of instrumentation used in medicine are covered. Examples will include pressure and volume measurements in respiratory medicine, and electric potential measurements in cardiology.

PHYS 5004 **Radiation Dosimetry**
6 credit points. Grad Dip Med Phys, M Med Phys. **Session:** Semester 1. **Classes:** 2 lec/wk, 1 prac/wk. **Assessment:** assignments, written exam.
In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the principles of both absolute and relative measurement of ionising radiation in radiotherapy and medical imaging are covered. Issues related to the dosimetry of non-ionising radiation are also covered.

PHYS 5005 **Radiotherapy Physics**
6 credit points. Grad Dip Med Phys, M Med Phys. **Session:** Semester 2. **Classes:** 2 lec/wk, 1 prac/wk. **Assessment:** assignments, written exam.
In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, both theoretical and practical aspects of the major topics in radiotherapy physics are covered. These topics include radiation beam production and modification, calibration and characterisation, principles of treatment planning, dose calculation and reporting, and the physics of brachytherapy.

PHYS 5006 **Medical Imaging Physics**
6 credit points. Grad Dip Med Phys, M Med Phys. **Session:** Semester 2. **Classes:** 2 lec/wk, 1 prac/wk. **Assessment:** assignments, written exam.
In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the physical principles underlying the science of imaging in radiology, ultrasound, magnetic resonance imaging and nuclear medicine are covered.

PHYS 5007 **Image Processing**
3 credit points. Grad Dip Med Phys, M Med Phys. **Session:** Semester 2. **Classes:** 2 lec/wk, 1 prac/wk, for half semester. **Assessment:** assignments, written exam.
In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the theory of image formation, concepts of computing, numerical methods and image processing are covered, including techniques such as enhancement, registration, fusion and 3D reconstruction.

PHYS 5008 **Radiation Biology and Health Physics**
6 credit points. Grad Dip Med Phys, M Med Phys. **Session:** Semester 2. **Classes:** 2 lec/wk, 1 prac/wk. **Assessment:** assignments, written exam.
In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, the biological effects due to the interaction of radiation with human tissues from the DNA level through to the major organ systems are covered. Factors affecting dose response of tissue are considered along with models describing characteristic behaviour.

PHYS 5009 **Research Methodology**
3 credit points. Grad Dip Med Phys, M Med Phys. **Session:** Semester 2. **Classes:** Classes: 2 lec/wk, 1 prac/wk, for half semester. **Assessment:** assignments, written exam.
In this unit normally undertaken as part of the Masters of Medical Physics degree or the Graduate Diploma in Medical Physics, an understanding of the processes involved in conducting various forms of research, basic data analysis and interpretation, research writing and presentation skills are covered. The professional framework is presented by considering issues such as legal, ethical and basic management issues.

PHYS 5010 **Project**
24 credit points. Grad Dip Med Phys, M Med Phys. **Session:** Semester 2, Semester 1. Assessment: report.
NB: This unit is only available for students in the Master of Medical Physics degree
This unit is a research project to be carried out in a hospital or similar environment. The topic of the project will be determined in consultation with the course coordinator.

Nutrition and Dietetics

Master of Nutrition and Dietetics

Course overview
The MNutrDiet is a course designed to survey all aspects of human nutrition, with special emphasis on the needs of dietitians who will be working in Australia. It provides the basic training for hospital and community dietitians and nutritionists and is one of the recognised professional courses for dietitians in Australia.

The course requires two years of full-time work and study. The first year consists of coursework, lectures, tutorials and practicals. In the second year, one semester is devoted to clinical training and the other semester is spent on a small research project. The dates for this course do not follow the undergraduate academic year. First year starts at the same time as undergraduate teaching but there is some work during vacations. Second year commences in late January.

Course outcomes
Upon completion of the course, the graduate will have a sound knowledge base in nutrition and dietetics, possess the skills to improve nutritional status of individuals, families and the community at large and to modulate the course of illness with dietetics. The graduate will be skilled in basic research and have a lifelong commitment to the pursuit of excellence in professional conduct.

Admission Requirements
Applicants must have a degree from a recognised tertiary institution and have completed two semesters of study in Biochemistry and two semesters in Human Physiology. This preparation is required by the Dietitians Association of Australia. Applicants who meet the minimum entry requirements are then ranked according to their academic record and performance in Biochemistry and Physiology. Offers of places are dependent upon the ranking of applicants and competition for places.

Course requirements
First Year: This is an integrated academic year of teaching, practicals and study. As part of the course, students attend the Ryde College of Technical and Further Education for practicals in commercial cookery, followed by dietetic cookery. This costs an additional $550. All students take the courses listed below.

Second year: In the February semester of second year (Jan to June) approximately half of the class do a clinical and community dietetics training placement while the other half do a research project. Then in the July semester of second year (July to Nov) students cross over to the alternate course.

During the second year all students are required to attend formal lectures at the University on several days. Lectures on management, advanced clinical nutrition and advanced community nutrition are compulsory.

The units of study are supervised by a Program Committee in Nutrition and Dietetics, chaired by the Dean of the Faculty of Science.

Course Resolutions: see chapter 7.

Unit of study		Credit points
Year 1, Semester 1		
NTDT 5501	Nutritional Science	6
NTDT 5502	Food Science	3
NTDT 5503	Dietary Intake & Nutritional Assessment	6

NTDT 5504	Communications A	3
NTDT 5305	Food Service Management	6
Year 1, Semester 2		
NTDT 5307	Clinical Nutrition and Dietetics	12
NTDT 5308	Community and Public Health Nutrition	10
NTDT 5309	Communication	2
Year 2, Semester by arrangement		
NTDT 5310	Nutrition Research Project	24
NTDT 5311	Nutrition Practice	12
NTDT 5312	Nutrition & Dietetics Training Placement	12

NTDT 5501 **Nutritional Science**

6 credit points. Grad Cert Appl Sc (Nutr & Diet), M Appl Sc (Nutr Diet), M Nutr Diet, M Nutr Sc. A/Prof Samir Samman. **Session:** Semester 1. **Classes:** 4 lec/wk. Assessment: Set reading, 2-hr exam.

NTDT 5501 aims to give a broad appreciation of different nutrients and the ways in which they are metabolised. The focus is on the multiple factors that drive metabolism and subsequently the relationship between nutrients and health and/or disease. Nutrients are discussed according to category, macronutrients and micronutrients, and there are different themes, including: the chemistry of macronutrients, vitamins and minerals, food sources and factors affecting availability for absorption, metabolism and excretion of the nutrient, the biochemical, physiological and pharmacological actions, methods of assessing biochemical status, the requirements at each stage of life and recommended intakes, signs of deficiency and toxicity, interactions with other nutrients.

NTDT 5501 is a compulsory unit of study for students undertaking the Master of Nutrition and Dietetics or Master of Nutrition Science degrees and compliments the learning in Food Science. NTDT 5501 is also offered as an optional course to students in other degree programs.

Textbooks

Mann JI and Truswell AS. Essentials of Human Nutrition. 2nd edition, Oxford University Press 2002.

Shils ME, Olson JA, Sheike M and Ross AC. Modern Nutrition in Health and Disease. 10th edition, Lipincott 2004.

NTDT 5502 **Food Science**

3 credit points. Grad Cert Appl Sc (S I S), M Appl Sc (Nutr Diet), M Nutr Diet, M Nutr Sc. Prof. **J** Brand-Miller. **Session:** Semester 1. **Classes:** 2 lecs/wk. Assessment: Set reading, exam.

NTDT 5502 aims to give a broad appreciation of different types of foods, the ways in which they are processed and consumed, their social context as well as their nutritional attributes. The focus is on the multiple factors that drive a food's relationship to health and/or disease. Foods are covered according to category: animal foods, seafoods, cereals, sugars, fats and oils, dairy products, legumes, nuts, roots, tubers, green leafy vegetables, fruits, herbs and spices and alcohol. NTDT 5502 is a compulsory unit of study for students undertaking the Master of Nutrition and Dietetics or Master of Nutritional Science degrees and compliments the learning in Nutritional Science. NTDT 5502 is also offered as an optional course to students in other degree programs.

Textbooks

Mann JI and Truswell AS. Essentials of Human Nutrition. 2nd edition, Oxford University Press 2002.

Proudlove RK. The Science and Technology of Foods. Forbes London, 1997.

NTDT 5503 **Dietary Intake & Nutritional Assessment**

6 credit points. Grad Cert Bioethics, M Appl Sc (Nutr Diet), M Nutr Diet, M Nutr Sc. Dr Karen Webb. **Session:** Semester 1. **Classes:** 3 lec, 2 workshop/wk. Assessment: Assignment, reports.

Basic concepts in nutritional status; four methods of dietary assessment in individuals, advantages and limitations; validation of dietary methods; nutritional guidelines, targets and recommended dietary intakes; computerized nutrient analysis; limitations of food composition analysis. Behavioural influences on food intake. Nutritional assessment of individuals through clinical examination and commonly used laboratory biochemical tests for nutritional status; methods used to diagnose nutritional deficiencies; specificity, reliability of biochemical tests. Anthropometry and body composition; soft tissue measurement; percent body fat; reference standards; growth standards and percentiles.

Textbooks

Principles of Nutritional Assessment. R.S. Gibson, Oxford University Press, New York, 1990.

Nutritional Assessment. A Laboratory Manual. RS Gibson, Oxford University Press, New York, 1993.

NTDT 5504 **Communications A**

3 credit points. Grad Cert Bioethics(Biotech), M Appl Sc (Nutr Diet), M Nutr Diet, M Nutr Sc. Soumela Amanatidis
Veronica Taffs. **Session:** Semester 1. **Classes:** 2 lee, 1 workshop / wk. Assessment: One assignment, 2 tutorial papers.

NTDT 5504 introduces students to the theories of effective communication. Students will acquire skills used to communicate with individuals in a variety of contexts, including the patient/client and his/her family, colleagues, other health team members and the community-at-large. Factors enhancing and distracting from effective communication are identified. The role of the dietitian as a facilitator of change is explored. Barriers to change and techniques used to enhance compliance are identified. Opportunity is provided for students to evaluate their own communication and interviewing skills. Students will also acquire knowledge and skills in planning, implementing and evaluating small group education.

Textbooks

Bauer K and Sokolik C. "Basic Nutrition Counselling Skills". Wadsworth, 2002.

NTDT 5305 **Food Service Management**

6 credit points. M Nutr Diet, PG Coursework Exchange. Ms Maria Kokkinakos. **Session:** Semester 1.

The study of food service systems for use in institutions.

NTDT 5307 **Clinical Nutrition and Dietetics**

12 credit points. M Nutr Diet, M Nutr Sc. Dr D Volker. **Session:** Semester 2.

This unit of study includes paediatrics at the New Children's Hospital, the study of medicine as it relates to nutrition, and the modification of diet and nutrition support of patients with different illnesses.

NTDT 5308 **Community and Public Health Nutrition**

10 credit points. M Nutr Diet, M Nutr Sc. Ms Sue Amanatidis. **Session:** Semester 2.

The study of nutrition assessment, planning, intervention and outcomes in the community, and the study of nutrition in the prevention of disease and the methods involved in promotion of nutritious food for all.

NTDT 5309 **Communication**

2 credit points. M Nutr Diet, M Nutr Sc. Ms Veronica Taffs. **Session:** Semester 2.

The study of counselling and education methods to communicate nutrition to individuals, groups and nations.

NTDT 5310 **Nutrition Research Project**

24 credit points. M Nutr Diet. A/Prof Samir Samman. **Session:** Semester 1, Semester 2.

During the research semester each student has a research supervisor. Research projects can include small surveys, simple bench work, supervised hospital assignments or library searches, and are carried out in the University or with an external supervisor. Students also attend nutrition seminars.

NTDT 5311 **Nutrition Practice**

12 credit points. M Nutr Diet, PG Coursework Exchange. Ms Margaret Nicholson. **Session:** Semester 1, Semester 2.

NB: This unit of study will commence prior to the start of semester.

The aim of this unit is to provide further knowledge and develop counselling strategies in specialty areas of dietetic practice. It builds on subjects introduced in the first year of the Masters course.

NTDT 5312 **Nutrition & Dietetics Training Placement**

12 credit points. M Nutr Diet. Ms Margaret Nicholson. **Session:** Semester 1, Semester 2.

NB: This unit of study will commence prior to the start of semester.

Students are attached to two or more teaching hospitals and their associated community dietetic centres. The majority of time is spent in the wards or outpatient departments. There are up to 20 weeks' of training in dietetic practice in major primary health institutions so this unit starts early.

512 Nutrition Research Project units (preamble ID: 512)

NTDT 5322 **Nutrition Research Project A**

12 credit points. M Nutr Diet. **Session:** Semester 1, Semester 2.

This unit of study is for part-time students upgrading from the DipNutrDiet to the MNutrDiet, and it involves completing a research project.

NTDT 5323 **Nutrition Research Project B**

12 credit points. M Nutr Diet. **Session:** Semester 1, Semester 2.

This unit of study is for part-time students upgrading from the DipNutrDiet to the MNutrDiet, and it involves completing a research project.

Master of Nutritional Science

Course overview
The MNutrSc provides the same survey of all aspects of human nutrition in the first year as the MNutrDiet, but is designed for those persons who wish to pursue a career in nutrition research. The second year is devoted to a research project, with regular seminars. Students have a range of areas to choose from for their research year, for example sports nutrition, lipid biochemistry, infant nutrition or ecological research.

Course outcomes
Upon completion of the course the graduate will have a sound knowledge base in nutritional science and possess the skills to conduct nutrition research projects.

Course requirements
First year: The first year coursework and practicals coincide with those for MNutrDiet except that NTDT 5305 is replaced with the units of study NTDT 5306 and NTDT 5315.

Second Year: The second year is devoted to a full-time research project, supervised by a member of the academic staff of the Human Nutrition Unit, which is written up for assessment in a short thesis. Students enrol in NTDT 5313 and NTDT 5314.

Admission
Applicants must have a degree from a recognised institution and have completed two full semesters in both Biochemistry and Human Physiology. However, the requirement for second year university physiology can be replaced by such alternatives as a third year course in Biochemistry or in Food Science. Application forms are available from the Faculty of Science. Applications close in early November and should be lodged with the Faculty of Science together with your academic record.

Course Resolutions: see chapter 7.

Unit of study descriptions
See also units listed under first year for Master of Nutrition and Dietetics (above).

Unit of study		Credit points
Year 1, Semester 1		
NTDT 5501	Nutritional Science	6
NTDT 5502	Food Science	3
NTDT 5503	Dietary Intake & Nutrition	6
NTDT 5504	Principles of Dietetic Practice	3
NTDT 5306	Introduction to Food Service	3
NTDT 5315	Scientific Methodology in Nutrition	3
Year 1, Semester 2		
NTDT 5307	Clinical Nutrition & Dietetics	12
NTDT 5308	Community & Public Health	10
NTDT 5309	Communication	2
Year 2		
NTDT 5313	Nutritional Science Research A	24
NTDT 5314	Nutritional Science Research B	24

NTDT 5306 **Introduction to Food Service**
3 credit points. M Nutr Sc, PG Coursework Exchange. Ms Maria Kokkinakos. **Session:** Semester 1.
An introduction to food service systems in institutions.

NTDT 5315 **Scientific Methodology in Nutrition**
3 credit points. M Nutr Sc, PG Coursework Exchange. A/Prof Samir Samman. **Session:** Semester 1.
A small report on the desired area of research in year 2.

NTDT 5313 **Nutritional Science Research A**
24 credit points. M Nutr Sc. **Session:** Semester 1.
Students have a range of areas to choose from for their research year, e.g. sports nutrition, lipid biochemistry, infant nutrition or ecological research.

NTDT 5314 **Nutritional Science Research B**
24 credit points. M Nutr Sc. **Session:** Semester 2.

Psychology

Graduate Diploma in Psychology

Course outcomes
Upon completion of the course, the graduate will have a Psychology major, accredited by the Australian Psychological

Society, equivalent to that available in the Bachelor of Arts, Bachelor of Science, Bachelor of Economics (Social Science) or Bachelor of Liberal Studies. They will have studied all basic areas of experimental Psychology, statistical methods in Psychology, and an extensive range of optional topics. They will be eligible to apply to continue to a fourth year in Psychology, either in Psychology 4 (Honours) or the Graduate Diploma in Science (Psychology), and from there to a higher degree in Psychology.

Eligibility for admission
1. The Faculty of Science may admit to candidature applicants who hold the award course of Bachelor of Science, Bachelor of Arts, Bachelor of Economics (Social Science), or Bachelor of Liberal Studies from the University of Sydney, or equivalent degree as deemed by the Faculty, who have not previously completed a major in Psychology. When assessing an applicant, both undergraduate record and UAI (or equivalent) may be taken into account.

2. Applicants must have already successfully completed 12 credit points of Junior Psychology (currently PSYC 1001 and 1002) or equivalent within the last 10 years, except that an applicant who has completed 6 credit points of Junior Psychology at The University of Sydney in the previous 12 months with a grade of Distinction or better, shall be considered for admission. (Subject to Academic Board approval).

Method of progression
Students are required to study a minimum of 48 credit points of Intermediate and Senior level Psychology. This shall consist of 24 credit points of Intermediate Psychology (currently PSYC 2111 or 2011,2112 or 2012,2113 or 2013 and 2114 or 2014) and a minimum of 24 credit points of Senior Psychology. Students must complete the necessary qualifying units of study for entry into later units of study. Normally, progression will be over a minimum of four semesters. Students may study additional Senior Psychology if they wish.

To be eligible for study in Psychology beyond the Graduate Diploma at the University of Sydney, students must, except with School approval, include PSYC 3010 Advanced Statistics for Psychology for entry to the Graduate Diploma in Science or Psychology 4 (Honours). Successful completion of HPSC 3023 History & Philosophy of Psychology & Psychiatry is essential for students intending to take the Theoretical Thesis option in Psychology Honours.

Exemptions and Advanced Standing
Students may apply for exemptions if they have already completed studies which the Faculty deems equivalent to those in the program. Such units of study must have been completed within the previous ten years.

The amount of exemptions allowed will not exceed Faculty of Science regulations or will not exceed 24 credit points, whichever is the lower.

Units of study for Graduate Diploma in Psychology

- PSYC 2011 Brain and Behaviour
- PS YC 2012 Statistics & Research Methods for Psych
- PSYC2013 Cognitive and Social Psychology
- PSYC 2014 Personality and Differential Psychology
- PSYC 3010 Advanced Statistics for Psychology
- PSYC 3011 Learning & Behaviour
- PSYC 3012 Cognition, Language & Thought
- PSYC 3013 Perceptual Systems
- PSYC 3014 Behavioural & Cognitive Neuroscience
- PSYC 3015 Intelligence
- PSYC 3016 Developmental Psychology
- PSYC 3017 Social Psychology
- PSYC 3018 Abnormal Psychology
- PSYC 3019 Communication & Counselling

- HPSC3023 History & Philosophy of Psychology & Psychiatry

See chapter 3 for unit of study descriptions.

Course Resolutions: see chapter 7.

Graduate Diploma in Science (Psychology)

Award Course overview
The Graduate Diploma in Science (Psychology) is an Honours equivalent (in the terms used by the Australian Psychological Society) fourth year of study in Psychology. It is designed to meet the needs of students wishing to continue with Psychology but who have not completed a four year Honours program. The diploma requires one year of full-time or two years of part-time study.

Course outcomes
Upon completion of this course the graduate will have a sound background in significant issues in general and applied psychology, an understanding of research methodology in both experimental and field studies contexts, be capable of finding and assessing relevant research literature, be eligible to apply for further programs of study in psychology and be prepared to undertake supervised training in certain professional areas of psychology.

Eligibility for admission
The Resolutions of the Senate state, in part, that:

1.(1) The Faculty of Science, on the recommendation of the appropriate Interdepartmental Committee, may admit to candidature the following:

(b) Graduate Diploma in Science (Psychology): an applicant who is a holder of a Bachelor's degree with an APS accredited major in Psychology within the past 10 years from a recognised tertiary institution and has achieved a minimum Credit average in senior (third) year units of study which includes a unit in statistics/research methods which meets the requirements of the School. Entrance may be limited by a quota. Entry is normally based on academic merit. Requests for deferral of commencement of candidature will not be granted but applicants may re-apply in the following year/s. Entry is in the March semester only.

Course requirements
The program involves attending lectures and seminars in 5 core and 2 optional units. The compulsory (core) units are PSYC 4500 Research Project (A), PSYC 4501 Psychological Research Methods, PSYC 4502 Ethics, PSYC 4503 Special Fields Topic and PSYC 4505 Research Project (B). The optional units offered are PSYC 4506 Health and Safety Psychology Issues, PSYC 4507 Counselling Psychology and PSYC 4508 Psychology of Addiction. A full-time load will require 3 days of attendance per week. Part-time candidates will complete the PSYC 4500 Research Project (A), PSYC 4505 Research Project (B), and PSYC 4501 Psychological Research Methods in their first year.

Course Resolutions: see chapter 7.

Entry to other postgraduate programs
Students who have completed the Graduate Diploma in Science (Psychology) are eligible to apply for fifth and sixth year university programs in Psychology.

Current Departmental rules on progress
Candidates will not normally be allowed to repeat failed units of study if they have also failed the research project. Candidates who have passed the research project may be allowed to repeat up to two failed units of study.

Unit of study		Credit points
Full-time students		
Semester 1 Core units 24 credit points		
PSYC 4500	Research Project (A)	10
PSYC 4501	Psychological Research Methods	8
PSYC 4503	Special Fields Topic (A)	6
Semester 2 Core units 24 credit points		
PSYC 4505	Research Project (B)	10
PSYC 4502	Ethics and Current Issues in Psychology	2
Semester 2 Optional units of study (select 2 electives)		
PSYC 4509	Problem Gambling	6
PSYC 4506	Health & Safety Psychology Issues	6
PSYC 4507	Counselling Psychology	6
PSYC 4508	Psychology of Addiction	6
Part-time students		
Year 1, Semester 1 18 credit points		
PSYC 4500	Research Project (A)	10
PSYC 4501	Psychological Research Methods	8
Year 1, Semester 2 12 credit points		
PSYC 4505	Research Project (B)	10
PSYC 4502	Ethics	2
Year 2, Semester 1 6 credit points		
PSYC 4503	Special Fields Topic	6
Year 2, Semester 2 12 credit points		
Two Electives		12

PSYC 4500 **Research Project (A)**
10 credit points. B Ed, B A (Psych), B Ed, B Sc (Psych), Grad Dip Sc (Psych). **Session:** Semester 1. **Classes:** 1 hr/week. **Corequisites:** PSYC 4501. **Prohibitions:** PSYC4710. **Assessment:** 9000 word report.
This is the largest single component of the Graduate Diploma program. The Research Project is a yearlong component and is intended to demonstrate the capability of students to conceive and carry out original high level research. The Research Project is supervised by either a member of the academic staff or an approved supervisor from outside the School. Each supervisor has nominated a specific research area on which a small group of students will work. Each student in the research group must generate their individual hypothesis or hypotheses and prepare and submit their own independently written report, although a single experiment/survey will be carried out and the collection of data and data sets may be shared. A completed draft of each student's report will be read by the supervisor prior to the writing of a final version. The text of the report must not exceed 9,000 words in length (excluding abstract, tables, appendices and references).

PSYC 4501 **Psychological Research Methods**
8 credit points. B Ed, B A (Psych), B Ed, B Sc (Psych), Grad Dip Sc (Psych). **Session:** Semester 1. **Classes:** 44 hrs/semester. **Assumed Knowledge:** Nothing in excess of requirements set for admission into the GradDipSc(Psych) programme. **Prohibitions:** PSYC4711. **Assessment:** EDS A - examination; FRM - class quiz and examination.
EXPERIMENTAL DESIGN AND STATISTICAL ANALYSIS (EDSA)
The aim of this course is to expand the menu of statistical tools available to students for their research, and to develop their understanding of the conceptual bases of these tools. Tutorial work will involve exposure to the features available in a large statistical package (SPSS) while at the same time reinforcing the concepts discussed in lectures.
FIELD RESEARCH METHODS (FRM)
The aim of this course is to:
" develop students' awareness of the methods of field research in Psychology;
" to encourage a critical evaluation of the methods and develop an awareness of the problems in obtaining accurate field research data;
" to encourage a creative attitude and awareness of ways in which these problems might be overcome;
" overall, to develop students' expertise in carrying out quality field research and to be a critical consumer of others' field research.
The lecture series, supplemented by other reading, follows a progressive consideration of all stages that may be encountered in a field research project, from decisions on the appropriate statement of the research problem, methods of gathering data, sampling procedures, coding of data, etc.
The tutorial sessions utilize a series of in class and out of class exercises to give students a "hands on" awareness of the methods, problems and developing solutions in the field research process.

PSYC 4502 **Ethics**
2 credit points. B Ed, B A (Psych), B Ed, B Sc (Psych), Grad Dip Sc (Psych). **Session:** Semester 2. **Classes:** l x l hour lecture/week x 7 weeks. **Prohibitions:** PSYC4712. **Assessment:** Examination (1.5 hours) 100%.
This unit covers current ethical and professional issues in Psychology. Lectures concerning current ethical and professional issues will be given by Psychologists working in a range of professional settings, such as clinical, counselling, organizational, assessment, educational, health and research settings. The lecturers will discuss professional and ethical issues that commonly arise in these settings.
Textbooks
APS Code of Conduct for Psychologists. Other references vary with topics covered each year.

PSYC 4503 **Special Fields Topic**
6 credit points. B Ed, B A (Psych), B Ed, B Sc (Psych), Grad Dip Sc (Psych). **Session:** Semester 1. **Classes:** l x l hour seminar/week x 12 weeks. **Prohibitions:** PSYC4715, PSYC4719. **Assessment:** Assignments.
Students choose one of the topics available. The research seminar areas currently available are: Conceptual Foundations of Quantitative Methods, Current Approaches in Advanced Social Psychology, Current Controversies in Developmental Psychology, Eating and Weight-Related Issues, Health Psychology, Intelligence and Cognitive Abilities, Neuropsychological Rehabilitation, Learning, Models of Anxiety and Depression, Mysteries of the Mind, Neuroscience, Research in Counselling Psychology, Theory and Systems, Visual Neuroscience and Perceptual Systems, which are also offered as part of the Psychology Honours program. This list could change subject to staff availability.

PSYC 4505 **Research Project (B)**
10 credit points. B Ed, B A (Psych), B Ed, B Sc (Psych), Grad Dip Sc (Psych). **Session:** Semester 2. **Classes:** 1 hour supervision/week. **Prerequisites:** PSYC4500. **Prohibitions:** PSYC4720. **Assessment:** 9000 word report.

See description under Research Project A (PSYC 4500) above.

PSYC 4506 **Health and Safety Psychology Issues**
6 credit points. Grad Dip Sc (Psych). **Session:** Semester 2. **Classes:** 25 hrs/sem. **Prohibitions:** PSYC4716. **Assessment:** Class presentation (25%) and take-home exam (75%).
This course will elucidate the principles of health psychology (which is concerned with human behaviour in the context of health & illness), via critical evaluation of their relevance to various health problems. Topics covered include risk perception, genetic counseling and testing, health and illness behaviour, psychosocial predictors of disease development and outcome, psychosocial interventions, doctor-patient communication and end-of-life issues.

PSYC 4507 **Counselling Psychology**
6 credit points. B Ed, B A (Psych), B Ed, B Sc (Psych), Grad Dip Sc (Psych). **Session:** Semester 2. **Classes:** 25 hrs/sem. **Prohibitions:** PSYC4717. **Assessment:** Examination and seminars.
The weekly meetings will consist of lectures, seminar papers, discussions, role plays and demonstrations. The main aim of the course is to consider the application of general skills and theories of counselling to specific areas of counselling.
Topics will be selected from those listed below on the basis of the experience and interests of the class members.
Defining counselling. Skills oriented models of individual counselling and the organizing principles of counselling as proposed by various theoretical viewpoints. Relational counselling: Extending theories and principles of individual counselling to relational work and issues. Practice: Applying counselling theory and skills in various community settings; Industry, education, personal growth, vocational guidance, rehabilitation, health, grief, contemporary issues (eg. domestic violence, suicide), multicultural issues. Professional issues: Supervision; burnout; ethics; professional associations; using research to guide and inform counselling practice.
Textbooks
Corey, G. (2001). Theory and Practice of Counseling and Psychotherapy. Brooks-Cole.
Egan, G. (2001). The Skilled Helper : A Problem Management Approach to Helping. Brooks-Cole.

PSYC 4508 **Psychology of Addiction**
6 credit points. Grad Dip Sc (Psych). **Session:** Semester 2. **Classes:** 25 hrs/sem. **Prohibitions:** PSYC4718. **Assessment:** Essay and examination.
The course is concerned with addictive behaviours such as smoking, alcohol consumption, illicit drug use, eating, gambling, and playing computer games. The course begins with a critical examination of the meaning of 'addiction'. The remainder of the course is divided between addictive behaviour where drugs are not involved (so-called 'psychological addictions') and addictive behaviour where consumption of drugs is involved (so-called 'drug addictions'). The focus of the first segment on psychological addiction is the question of whether such behaviour meets the criteria for description as addictive, and what is gained by broadening or weakening the notion of addiction to include psychological addiction. The behaviours used as the primary examples of psychological addictions are excessive eating and pathological gambling. The focus of the second segment on drug addiction is the biology, pharmacology, genetics and socio-political climate of drug consumption. Emphasis is placed on the question of whether nicotine is an addictive substance. Throughout the unit, there is a strong emphasis on clinical aspects of addictive behaviour and preferred treatment options. The course is intended to be a useful introduction to students who are contemplating a career in drug and alcohol work, in addictions counselling and in the treatment of pathological gambling.

PSYC 4509 **Problem Gambling**
6 credit points. Grad Dip Sc (Psych). **Session:** Semester 2. **Classes:** 25 hrs/sem. **Assessment:** Essay and examination.
This unit is intended to provide a comprehensive coverage of the causes, assessment and treatment of problem gambling. The syllabus includes:
History of gambling; explanations for gambling behaviour; concepts of compulsive gambling, pathological gambling, excessive gambling and problem gambling; prevalence of problem and pathological gambling; theories of causation of pathological gambling; assessment of excessive gambling and the problems caused by excessive gambling; treatment of pathological gambling: behavioural, cognitive, client centred, and other methods; effectiveness of different treatment approaches; preventive strategies.

Coursework degress in Applied Science

Graduate Certificate in Applied Science
Graduate Diploma in Applied Science
Master of Applied Science
Course overview
The Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science are articulated coursework programs available over a number of different subject areas offered by the Faculty, or in the following subject areas:
- Bioinformatics
- Coastal Management
- Environmental Science
- Microscopy and Microanalysis
- Molecular Biotechnology
- Neuroscience (not available to new students in 2006)
- Psychology of Coaching

- Spatial Information Science (Graduate Certificate only)
- Wildlife Health and Population Management

Course outcomes

Upon completion of the Graduate Certificate graduates will possess a practical and theoretical background in some aspects of the field of study; this will be extended upon completion of the Graduate Diploma and further extended to include research and practical skills upon completion of the Masters program.

Admission requirements

Applicants for the Graduate Certificate should hold a Bachelor's degree appropriate for the field of study, or experience which is considered to demonstrate the knowledge and aptitude required to undertake the course.

Applicants for the Graduate Diploma should hold a Bachelor's degree appropriate for the field of study, or an equivalent standard of knowledge; or have completed the Graduate Certificate in Applied Science in the same field of study.

Applicants for the Master in Applied Science should hold a Bachelor's degree appropriate for the field of study, or an equivalent standard of knowledge; or have completed the Graduate Diploma in Applied Science in the same field of study.

Some subject areas are not yet available as a fully articulated program. See sections for individual subject areas below.

For particular subject areas there may be additional admission requirements. See sections for individual subject areas below.

Course requirements

To qualify for award of the Graduate Certificate in Applied Science candidates must complete 24 credit points of units of study approved for the relevant field of study.

To qualify for award of the Graduate Diploma in Applied Science candidates must complete 36 credit points of units of study approved for the field of study.

To qualify for award of the Master of Applied Science candidates must complete 48 credit points of units of study approved for the field of study.

All units of study for a particular subject area may not be available every semester. The Faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

Credit for previous study

Credit is not available in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science for postgraduate study which has not been undertaken in these award courses within the previous three years, except at the discretion of the Dean.

A candidate who has qualified for the award of the Graduate Certificate in Applied Science may transfer, within three years, to the Graduate Diploma in Applied Science and receive credit for up to 24 credit points from the Graduate Certificate in Applied Science.

A candidate who has qualified for the award of the Graduate Diploma in Applied Science may transfer, within three years, to the Master of Applied Science and receive credit for up to 36 credit points from the Graduate Diploma in Applied Science.

A candidate who has completed units of study in the Applied Science program within the previous three years, but has not qualified for an award, may transfer to another award within the same Applied Science program and receive credit for the units of study completed.

Course Resolutions: see chapter 7.

Bioinformatics

Graduate Certificate in Applied Science (Bioinformatics)
Graduate Diploma in Applied Science (Bioinformatics)
Master of Applied Science (Bioinformatics)

Course Overview

The Graduate Certificate in Applied Science (Bioinformatics), Graduate Diploma in Applied Science (Bioinformatics) and Master of Applied Science (Bioinformatics) are articulated award courses that provide a professional qualification to biologists and computer scientists working in industry, research and education. The award program brings together the disciplines of computer science, statistics and the life sciences, developing and enhancing skills in bioinformatics. Students with little background in molecular biology who want to extend their understanding of the biosciences, statistics and bioinformatics will follow Stream A. Students who have a strong background in molecular biology and want to study bioinformatics, statistics and computer science should follow Stream B. The Program has core and optional units of study to satisfy both of these requirements and will produce graduates with skills in the disciplines that underpin bioinformatics and in bioinformatics itself. Graduates from the Bioinformatics Program will be proficient in molecular biology, genetics and bioinformatics. (Biology graduates who want to learn about computer programming are directed to the Graduate Diploma in Computing).

Course Outcomes

The aim of this articulated coursework program is to provide students with a coordinated approach to bioinformatics, thus developing expertise to perform and develop the analysis of biological data with underlying competencies in the life sciences, computer science and statistics. Upon completion of the Graduate Certificate, Graduate Diploma or Masters, graduates will have a broad understanding of the topic of bioinformatics. In addition, the Masters will provide the option of experience in carrying out and completing a research project and report.

Admission Requirements

Applicants for the Graduate Certificate in Applied Science (Bioinformatics) should hold a first degree in science (computer science or molecular biology).

Applicants for the Graduate Diploma in Applied Science (Bioinformatics) similarly should hold a first degree in science (computer science or molecular biology), or have completed the Graduate Certificate in Applied Science (Bioinformatics).

Applicants for the Master of Applied Science (Bioinformatics) should hold a first degree in science (computer science or molecular biology), or have completed the Graduate Diploma in Applied Science (Bioinformatics).

Course Requirements

To qualify for award of the Graduate Certificate in Applied Science (Bioinformatics), candidates must complete 24 credit points from the four core units of study (Stream A and B).

To qualify for award of the Graduate Diploma in Applied Science (Bioinformatics), candidates must complete 24 credit points from the four core units and 12 credit points from the optional units of study shown (Stream A), or 30 credit points from the five core units and 6 credit points from the optional units of study (Stream B), as described in the table below.

To qualify for award of the Master of Applied Science (Bioinformatics), candidates must complete 24 credit points from four core units and 24 credit points from the optional units of study (Stream A), or 30 credit points from five core units and 18 credit points from the optional units of study (Stream B), as described in the table below.

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

Credit for previous study

See Graduate Certificate, Graduate Diploma and Master of Applied Science in this chapter or Course Resolutions in chapter 7.

Unit of study		Core
Unless otherwise indicated, all units are worth 6 credit points		
Stream A		
BIOL 5001	Molecular Genetics & Inheritance	C*
BIOL 5002	Bioinformatics: Sequences & Genomes	C*
MOBT5201	Molecular Biotechnology A (Theory)	**C***
STAT 5001	Applied Statistics for Bioinformatics	**C***
BINF 5002	Bioinformatics Research Project A	

BINF 5003	Bioinformatics Research Project B	
COMP 5028	Object Oriented Analysis and Design	
COMP5318	Knowledge Discovery and Data Mining	
COMP 5426	Network Based High Performance Computing	
MCAN5104	Image Analysis	
Stream B		
BIOL 5002	Bioinformatics: Sequences & Genomes	C*
COMP 5213	Computer & Network Organisation	C*
MOBT 5201	Molecular Biotechnology A (Theory)	**C***
STAT 5001	Applied Statistics for Bioinformatics	**C***
COMP 5214	Software Development in Java	**C**
BINF 5002	Bioinformatics Research Project A	
BINF 5003	Bioinformatics Research Project B	
COMP 5206	Introduction to Information Systems	
COMP 5211	Algorithms	
MCAN5104	Image Analysis	
* Core Units for Graduate Certificate		

BINF 5002 **Bioinformatics Research Project A**
6 credit points. Grad Dip App Sc (Bioinformatics). Dr Jermiin & Dr Firth. **Session:** Semester 1, Semester 2. **Corequisites:** BIOL (5001 and 5002) and BCHM 5001 and STAT 5001..
NB: Department permission required for enrolment.
BINF 5002 comprises the commencement of a research project on a topic with significant emphasis on the use of bioinformatics tools to address important questions in the areas of biology, biochemistry, mathematics and statistics, computer science, crop and veterinary sciences, and medical science. Students will be working with an appointed supervisor from the Faculties of Agriculture, Science, Veterinary Science, and Medicine or from industry under the guidelines of the convenor. Students will commence a small research project in an area agreed by the student, the supervisor and the convenor. Research experience is highly valued by prospective employers as it shows a willingness and ability to undertake independent, as well as guided, research in bioinformatics. The project is not conducted in the way of contact hours per week for a semester. Rather, the student is expected to work in a continuous manner throughout the semester.

BINF 5003 **Bioinformatics Research Project B**
6 credit points. Grad Dip App Sc (Bioinformatics). Dr Jermiin & Dr Firth. **Session:** Semester 1, Semester 2. **Corequisites:** BIOL (5001 and 5002) and BCHM 5001 and STAT 5001…
NB: Department permission required for enrolment. Department permission required for enrolment.
BINF 5003 comprises the continuation of a research project commenced in BINF 5002 on a topic with significant emphasis on the use of bioinformatics tools to address important questions in the areas of biology, biochemistry, mathematics and statistics, computer science, crop and veterinary sciences, and medical science. Students will be working with an appointed supervisor from the Faculties of Agriculture, Science, Veterinary Science, and Medicine or from industry under the guidelines of the convenor. The research project will be in an area agreed by the student, the supervisor and the convenor. Research experience is highly valued by prospective employers as it shows a willingness and ability to undertake independent, as well as guided, research in bioinformatics. The project is not conducted in the way of contact hours per week for a semester. Rather, the student is expected to work in a continuous manner throughout the semester.

BIOL 5001 **Molecular Genetics and Inheritance**
6 credit points. Grad Cert App Sc (Bioinformatics), PG Coursework Exchange. **Session:** Semester 1.
The fundamentals of inheritance and applications of molecular genetics will be covered. At the completion of the Unit, students will be able to recognise the most common modes of inheritance, understand the fundamentals of linkage analysis, be familiar with common genome structures, be familiar with modes of transmission and mechanisms of change in genetic material, be familiar with the genetic mechanisms behind complex biological systems, understand basic methods in recombinant DNA technology, be adept at applying genetics to solving problems in biology and understand the fundamentals of quantitative and population genetics.

BIOL 5002 **Bioinformatics: Sequences and Genomes**
6 credit points. Grad Cert App Sc (Bioinformatics), PG Coursework Exchange. Dr Firth & Dr Jermiin. **Session:** Semester 2. **Corequisites:** BIOL 5001..
Bioinformatics - the application of computers to life sciences, and genomics - the study of biology at the genome-wide scale, are revolutionising basic and applied biological sciences in the 21st century. The unit focuses on the application of bioinformatics to the storage, retrieval and analysis of biological information, principally in the form of nucleotide and amino acid sequences. An extensive practical component emphasises the development of hands-on skills in the use of bioinformatics technologies. Students will gain an appreciation of the significance and potential of bioinformatics and genomics in contemporary life sciences; an awareness of the breadth of bioinformatics resources and applications, including non-sequence-based biological information; skills and experience in the use of a core set of programs and databases for nucleotide and amino acid sequence analysis and phylogenetic reconstruction; a basic understanding of the theoretical foundation and underlying assumptions of the programs, and their relative strengths/limitations; and, competence in the evaluation of output from the programs in appropriate biological context.

COMP 5213 **Computer and Network Organisation**
6 credit points. Grad Cert App Sc (Bioinformatics), Grad Cert Appl IT, Grad Cert Inf Tech Man, Grad Dip Comp, M Sc, PG Coursework Exchange. **Session:** Semester 2, Semester 1. **Classes:** 2 lee & 1 tut/wk. **Assessment:** Assignments, written exam.
This unit of study is an overview of hardware and system infrastructure software including compilers, operating systems, device drivers, network protocols, etc. It also includes user-level Unix skills and network usability.
Objectives: On completion of this unit students will have developed an understanding of compilers, operating systems, device drivers, network protocols, Unix skills and network usability.

COMP 5214 **Software Development in Java**
6 credit points. Grad Cert App Sc (Bioinformatics), Grad Cert Appl IT, Grad Dip Comp, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 lee & 1 tut/wk. **Assessment:** Assignments, written exam.
This unit of study introduces software development method where the main emphasis is on the careful adherence to a process. It includes design methodology, quality assurance, group work, version control, and documentation. It will suit students who do not come from a programming background but who want to learn the basics of computer software.
Objectives: This unit of study covers system analysis, design methodology, quality assurance, group collaboration, version control, software delivery and system documentation.

MOBT 5201 **Applied Molecular Biotech A (Theory)**
6 credit points. Grad Cert App Sc (Bioinformatics), PG Coursework Exchange. Dr Kevin Downard
Dr Neville Firth
Prof Tony Weiss. **Session:** Semester 1. **Classes:** 2 lectures and 1 tutorial per week. **Prohibitions:** BCHM (3098 and 5001), MOBT5101. **Assessment:** 1 x two hour theory exam (70%) and in semester assessments (30%).
This unit of study comprises the lecture component of MOBT5101.

STAT 5001 Applied Statistics for Bioinformatics
6 credit points. Grad Cert App Sc (Bioinformatics), PG Coursework Exchange. **Session:** Semester 1.
This is an introduction to statistics and data analysis used in Bioinformatics and many other areas of Biology. It aims to give an understanding of the concepts and the use of a major scientific statistical package, R. In addition to an introduction to ideas of analysis of data and statistical tests the unit will introduce ideas of simulation in resampling and the methods of clustering and classification of particular importance in Bioinformatics.

Coastal Management

Graduate Certificate in Applied Science (Coastal Management)
Graduate Diploma in Applied Science (Coastal Management)
Master of Applied Science (Coastal Management)
Course Overview
The University of Sydney Institute of Marine Science in collaboration with the Department of Land and Water Conservation, the NSW Coastal Council and Surf Life Saving Australia, has developed a new and innovative graduate program in Coastal Management. This program is the only one of its kind in Australia, and has been designed and will be taught by leading researchers and practitioners of coastal management.
It will be taught primarily in coastal locations in the Sydney region. It will draw on local coastal management systems, issues and problems as part of the program material. It will also make use of the 2003 NSW Coastal Policy and Coastal Management Manual to provide students with an in-depth understanding of all aspects of coastal management. The program will include units on coastal processes and systems, coastal zone policy and management, beach management and the application of geographical information systems (GIS) to the coastal zone.
The program is ideal for recent graduates who wish to extend their knowledge of coastal and beach management, and for coastal practitioners in local, state, federal and other agencies and in industry who require additional training and knowledge of coastal management policy and issues. The program will provide formal training and also enable students to undertake a supervised coastal management project. A key aspect of all Masters units will be a broad on-site exposure to coastal processes, systems, issues and real management problems in the greater Sydney region, and in some units in regional NSW.
Course outcomes
Upon completion of the Graduate Certificate graduates will possess a practical and theoretical background in a range of issues related to coastal management. This knowledge can be extended by completion of a Graduate Diploma, and further extended through course work and research projects as part of a Masters program.
Admission Requirements
Applicants for the Graduate Certificate should hold a Bachelor's degree appropriate for the field of study, or experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study.
Applicants for the Graduate Diploma should hold a Bachelor's degree appropriate for the field of study, or have an equivalent standard of knowledge; or have completed the Graduate Certificate in Applied Science (Coastal Management).
Applicants for the Master of Applied Coastal Management should hold a Bachelor's degree appropriate for the field of study, or have an equivalent standard of knowledge; or have completed the Graduate Diploma in Applied Science (Coastal Management).
Course Requirements
To qualify for award of the Graduate Certificate in Applied Science (Coastal Management) students are required to satisfactorily complete 24 credit points of units of study including 12 from the core units and 12 from the remaining core and/or optional units, as described in the table below.
To qualify for award of the Graduate Diploma in Applied Science (Coastal Management) students are required to satisfactorily complete 36 credit points of units of study including 24 from the core units and 12 from the optional units, as described in the table below.
To qualify for award of the Masters of Applied Science (Coastal Management) students are required to satisfactorily complete 48 credit points of units of study including 24 from the core units and 24 from the optional units, as described in the table below.
Credit for previous study
See Graduate Certificate, Graduate Diploma and Master of Applied Science in this chapter or Course Resolutions in chapter 7.

Unit of study		Core/option
Unless otherwise indicated, all units are worth 6 credit points		
Graduate Certificate		
MARS 5001	Coastal Processes and Systems	C/O
MARS 5002	Coastal Zone Management	**c/o**
MARS 5003	Beach Management	C/O
GEOG 5001	Geographic Information Science A	**c/o**
Graduate Diploma and Masters		
MARS 5001	Coastal Processes and Systems	**c**
MARS 5002	Coastal Zone Management	**c**
MARS 5003	Beach Management	**c**
GEOG 5001	Geographic Information Science A	**c**
MARS 5004	Coastal Management Field School	0
NTMP 5005	Tropical Coastal Management	0
Masters		
MARS 5005	Coastal Management Project (12cp)	0
Optional units all degrees		
ENVI 5705	Ecological Principles for Scientists	0
ENVI 5803	Law and the Environment	0
ENVI 5808	Applied Ecology for Environmental Scientists	0
ENVI 5809	Computer Modelling & Resource Management	0
GEOG 5002	Geographic Information Science B	0

MARS 5001 **Coastal Processes and Systems**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. **Session:** Semester 1.
NB: This is a compulsory unit for all levels of the Applied Science (Coastal Management) program
This unit of study will examine the major coastal processes and systems of relevance to coastal zone management. These will include nearshore, estuarine and aeolian processes. Systems investigated will include rocky coasts and bluffs; beaches, barriers and dunes; and estuaries and inlets. The interaction between these processes and systems that are of most relevance to coastal management will be highlighted. These will include coastal hazards such as beach erosion, dune migration, bluff retreat, coastal flooding, inlet closure, and anthropogenic impacts such as pollution, storm water and acid sulphate soils. The unit will be presented both in lectures and field excursions, the latter enabling each system to be examined first hand.

MARS 5002 **Coastal Zone Management**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. **Session:** Semester 2.
NB: This is a compulsory unit for all levels of the Applied Science (Coastal Management) program
This unit explores various approaches to coastal zone management with an emphasis on the mamagement process adopted in NSW. Students will explore a range of coastal management issues such as beach erosion, water quality, habitat conservation and climate change and discuss various policies and planning approaches to address these issues. The practicals, tutorials and field excursions will introduce students to a range of coastal zone issues and management responses with in the Sydney area.

MARS 5003 **Beach Management**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci). **Session:** Semester 2.
NB: This is a compulsory unit for all levels of the Applied Science (Coastal Management) program
This unit of study focuses on the fundamental issues, strategies and infrastructure involved in the management of urban, rural and resort beach environments. At present, the concept and application of beach management is poorly defined. The goal of this unit of study is to provide an integrated and comprehensive template for beach management covering a range of issues such as beach hazard recognition and assessment, public safety and awareness, patterns of public beach usage, and the planning and undertaking of major events. Specific topics covered include hazardous wave and surf conditions, rip currents, lifeguarding, beach capacity, demographics of beach users, beach infrastructure, beach auditing, surf carnivals, sporting events and concerts. The unit will use lectures, real-world scenarios, case studies and field exercises to enable students to develop beach management plans appropriate to their backgrounds.

MARS 5005 **Coastal Management Project**
12 credit points. M Appl Sc (Coastal Mgt). **Session:** Semester 2, Semester 1. **Prerequisites:** MARS5001, MARS5002, MARS5003 and GEOG5001.
NB: Department permission required for enrolment. This is available only to students in the Master of Applied Science (Coastal Management) program
This unit will enable students who have completed earlier coursework to design and undertake a research project related to a coastal management topic under the supervision of an appropriate member of the teaching staff. The unit will be suitable for students who wish to learn how to undertake and complete an original research project, as well as students from industry and government organisations who wish to undertake a project that relates to their professional environment.

NTMP 5005 **Tropical Coastal Management**
6 credit points. Grad Cert App Sc (Coastal Mgt). Prof Andy Short. **Session:** Semester 2. **Classes:** Fieldschool 80hrs intensive. **Corequisites:** MARS (5002 and 5003). **Prohibitions:** NTMP3005. **Assessment:** Presentation, teamwork, assignment, 1 hr exam.
NB: Department permission required for enrolment. Limited places in this unit
This course examines the impacts of human activities on coastal and marine environments. It explores the complex relationships among the ecological and social values of these environments and outlines strategies and tools for their management. This is an intensive course that will be held at the University of Queensland Moreton Bay Research Station, North Stradbroke Island
Textbooks
Nil. Handouts provided.

GEOG 5001 **Geographic Information Science A**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), M Sc, PG Coursework Exchange. Dr David Chapman. **Session:** Semester 1, Semester 2. **Classes:** Six workshops. **Assessment:** Report.
This unit of study gives an overview of basic spatial data models, and enables students to understand the import and export of data to and from a geographical information system (GIS). The manipulation of spatial data at a level appropriate to planning or locational applications, and the development of thematic maps from diverse data layers, will be addressed.

GEOG 5002 **Geographic Information Science B**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. Dr Eleanor Bruce. **Session:** Semester 2. **Classes:** 2 lee, 1 tut, 3 prac/w. **Assumed Knowledge:** to standard of GEOG 5001. **Assessment:** 2500 w assignment, seminar presentation, tutorial reports, WebCT quiz.
This course will provide the conceptual background to more advanced GIS analysis applications and spatial reasoning methods in the context of contemporary environmental issues. The course is designed to provide an understanding of spatial analysis techniques available within a GIS environment, explore a diversity of both social and physical environmental applications and address emerging issues in GIS research. A range of topics will be introduced including field based capture of spatial information, spatial data structures, surface modelling, visibility analysis, hydrological modeling, network analysis, spatial data uncertainty and social GIS.
Conceptual material presented in lectures and tutorial workshops will be placed in an applied context through a series of laboratory and field sessions designed to strengthen practical understanding and awareness of GIS methods.

GEOG 5004 **Environmental Mapping and Monitoring**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. **Session:** Semester 2. **Prerequisites:** GEOG5001.

Environmental Science

Graduate Certificate in Applied Science (Environmental Science)
Graduate Diploma in Applied Science (Environmental Science)
Master of Applied Science (Environmental Science)

Further information can be found on the Environmental Science website: www.usyd.edu.au/envsci.

Course Overview
The Graduate Certificate in Applied Science (Environmental Science), Graduate Diploma in Applied Science (Environmental Science) and Master of Applied Science (Environmental Science) are articulated coursework programs that allow a large degree of flexibility in the depth at which studies are undertaken and the choice of subjects studied. Some of the major themes addressed include environmental sciences, environmental politics and law, project evaluation and assessment, decision making and conflict resolution.

Course Outcomes
The articulated award program in Environmental Science is designed for both recent graduates wishing to obtain employment in the environmental field and for graduates already working in an environmental sphere who are interested in gaining either a formal qualification in environmental science or additional information about related areas of environmental science.

Environmental managers and scientists are increasingly finding that they need to have a broad interdisciplinary knowledge base and the ability to be flexible and innovative in their application of such knowledge. Thus the aim of this award program is to provide students with the ability to solve environmental problems that require the integration of knowledge from diverse disciplines. Emphasis is placed on studies which span several disciplines, adaptive problem solving, and the development of new skills and expertise.

Upon completion of the Graduate Certificate, graduates will possess a practical and theoretical background in some of the basic aspects of environmental science. This can be supplemented and extended upon completion of the Graduate Diploma, and extended further to include research and practical skills upon completion of the Masters program. Students completing the full postgraduate program will have a solid grounding in all basic areas of environmental science, enabling them to understand the environmental problems that can arise and the disparate solutions that can be applied to solve such problems, and to comprehend all aspects of environmental assessment.

Admission Requirements
Applicants for the Graduate Certificate in Applied Science (Environmental Science) should either hold a Bachelor's degree in Science

or in a field of study appropriate for expansion into Environmental Science, or possess experience which is considered to demonstrate the knowledge and aptitude required to undertake this award course.

Similarly, applicants for the Graduate Diploma in Applied Science (Environmental Science) should hold a Bachelor's degree in a field of study appropriate for expansion into Environmental Science, or possess an equivalent standard of knowledge, or have completed the Graduate Certificate in Applied Science (Environmental Science).

Applicants for the Master in Applied Science should hold a Bachelor's degree in a field of study appropriate for expansion into Environmental Science, or an equivalent standard of knowledge, or have completed the Graduate Diploma in Applied Science (Environmental Science).

Course Requirements
To qualify for award of the Graduate Certificate in Applied Science (Environmental Science) candidates must complete one of two core units of study (ENVI5708 or 5808) and 18 credit points from optional units of study, as described in the table below.

To qualify for award of the Graduate Diploma in Applied Science (Environmental Science) candidates must complete 36 credit points of units of study including 18 credit points from the core units (ENVI 5707 and 5808 and either 5708 or 5904) and 18 credit points from the optional units of study as described in the table below.

To qualify for award of the Master of Applied Science (Environmental Science) candidates must complete 48 credit points of units of study including 18 credit points from the core units (ENVI 5707 and 5808 and either 5708 or 5904) and 30 credit points from the optional units of study as described in the table below.

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

See Graduate Certificate, Graduate Diploma and Master of Applied Science in this chapter or Course Resolutions in chapter 7.

Unit of study		Core/option
Unless otherwise indicated, all units are worth 6 credit points		
Graduate Certificate		
ENVI 5705	Ecological Principles for Environmental Scientists	C
ENVI 5808	Applied Ecology for Environmental Scientists	C
Graduate Diploma and Masters		
ENVI 5705	Ecological Principles for Environmental Scientists	**C**
ENVI 5708	Introduction to Environmental Chemistry	**C**
ENVI 5808	Applied Ecology for Environmental Scientists	**C**
ENVI 5904	Understanding Environmental Uncertainty	**C**
Optional units Masters degree only		
ENVI 5501	Environmental Research Project	0
Optional units all degrees		
ENVI 5801	Social Science of the Environment	0
ENVI 5802	Resources and Regional Development	0
ENVI 5904	Understanding Environmental Uncertainty	0
GEOG 5002	Geographic Information Science B	0
MARS 5001	Coastal Processes and Systems	0
MARS 5002	Coastal Zone Management	0
MARS 5003	Beach Management	0
ENVI 5501	Environmental Research Project (12cp)	0
ENVI 5707	Energy Sources, Uses and Alternatives	0
ENVI 5803	Law and the Environment	0
ENVI 5805	The Urban Environment and Planning	0
ENVI 5809	Computer Modelling & Resource Management	0
ENVI 5901	Weathering Processes and Applications	0
ENVI 5903	Sustainable Development	0
ENVI 5904	Understanding Environmental Uncertainty	0
ENGG 5601	Greenhouse Gas Mitigation	0
GEOG 5001	Geographic Information Science A	0
CHEM 5001	Information Retrieval in the Sciences	0
PACS 6903	Peace and the Environment	0
WILD 5001	Australasian Wildlife: Introduction	0
WILD 5002	Australasian Wildlife: Field Studies	0
WILD 5007	Sustainable Wildlife Use and Stewardship	0

ENGG 5601 **Greenhouse Gas Mitigation**
6 credit points. Grad Cert App Sc (Enviro Sci), Grad Cert G G M, M E S, PG Coursework Exchange. A/Professor Ian Jones otg@otg.usyd.edu.au. **Session:** Semester 2. **Classes:** 26 hours lectures 13 hours tutorial/lab/site visits. **Assessment:** Assignments and final examination.
NB: Unit Administration: Web CT
Graduate unit of study designed for environmental engineering students, either M.E.S. or Grad. Cert, of GHG Mitigation
Keywords: Greenhouse science, energy efficiency, carbon sinks, climate change amelioration
Objectives: To develop an understanding of, the significance of carbon dioxide in climate; the role of increasing fossil fuel energy conversion efficiency; the international framework for carbon sinks; the size, cost, potential and nature of terrestrial and oceanic sinks of carbon; the amelioration of the impacts of climate change.
Outcomes: Students will be able to make recommendations of the most cost effective approach to enterprises meeting carbon dioxide limits expected to be imposed as a result of the Kyoto Protocol.
Textbooks
P. Riemer, A. Smith, K. Thambimuthu (1998). Greenhouse Gas Mitigation, Elsevier, Amsterdam. pp777.

ENVI 5501 **Environmental Research Project**
12 credit points. Grad Cert App Sc (Enviro Sci), M Envi Sci Law. **Session:** Semester 1, Semester 2.
NB: This unit of study is available only to students enrolled in MAppSc(EnvSc)
A valuable opportunity to apply some of the knowledge gained from earlier coursework, ENVI 5501 consists of a research project on a topic having significant environmental emphasis as arranged between the student and an appropriate supervisor. This research experience is highly valued by prospective employers as it shows a willingness and ability to undertake research with and without guidance. This project is not conducted by way of contact hours per week for a semester, but instead the student will work on the project full-time and in a continuous manner for the semester. This unit of study is available only to students enrolled in the Master of Applied Science (Environmental Science).

ENVI 5705 **Ecolog Principles for Environ Scientists**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), M Envi Sci Law, PG Coursework Exchange. Dr Charlotte Taylor. **Session:** Semester 1. **Classes:** Three lectures per week. **Assessment:** Assignment, presentation.
NB: This is a compulsory course for all levels of the Applied Science (Environmental Science) program.
This unit of study introduces fundamental concepts of modern ecology for environmental scientists so as to provide non-biologically trained persons an understanding of the nomenclature of ecology and the physical parameters represented.

ENVI 5707 **Energy - Sources, Uses and Alternatives**
6 credit points. Grad Cert App Sc (Enviro Sci), M Envi Sci Law, PG Coursework Exchange. Dr Chris Dey. **Session:** Semester 1. **Classes:** Two lectures per week and three field trips. Assessment: Assignment, presentation and quiz.
Environmental impacts of energy generation and use are addressed in this unit of study. Major topics include discussion of the various energy sources, global energy resources, the economics associated with energy production, the politics and culture that surrounds energy use, and the alternative sources of solar thermal and photovoltaic energy and atmospheric systems. This unit of study includes several field trips to energy utilities and industry groups associated with alternate energy sources and generation.

ENVI 5708 **Introduction to Environmental Chemistry**
6 credit points. Grad Cert App Sc (Enviro Sci), M Envi Sci Law, PG Coursework Exchange. Dr Gavin Birch. **Session:** Semester 1. **Classes:** Two lectures and one prac per week and one field trip. Assessment: Assignment, presentation and report.
NB: This is a compulsory course for the Grad Dip and Masters levels of the Applied Science (Environmental Science) program.
Introduction to Environmental Chemistry provides the basic chemical knowledge required to be able to understand chemical analysis of air, water and soil samples taken in the field. This is supplemented by a field-based project analysing soil and sediment samples for trace pollutants from locations in and around Sydney. This unit of study involves 4 contact hours per week for one semester as well as some time in the field as arranged with the class.

ENVI 5801 **Social Science of Environment**
6 credit points. Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. Associate Professor Philip Hirsch. **Session:** Semester 2. **Classes:** 2 lee, 2 sem, 3 field/w. Assessment: 2000 w assignment, seminar presentation, field report.
This unit provides key background concepts for the analysis of relationships between society and environment and natural resources. It deals with both broad theoretical approaches to the societal analysis of relationships between people and the environment, notably political ecology, and with specific themes including the sociological basis of collective action, property relations, resource tenure, decentralisation, participatory approaches to environmental and natural resource management, and systems of knowledge. It pays particular attention to the implications of heterogeneous and conflicting interests for environmental and natural resource management and explores ways of dealing with diverse stakeholder interests. The unit draws on examples from various countries, with special emphasis on Southeast Asia and Australia. The aim of the course is to provide conceptual tools that will be used in other units of study within the program and for application in analysis of resource and environmental management issues faced in real world decision-making contexts. The unit will draw on the professional experience and agency roles of participants. The unit is taught through a combination of lectures, reading-based seminars and a pre-sessional field visit.

ENVI 5802 **Resources and Regional Development**
6 credit points. Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. Assoc Prof Philip Hirsch. **Session:** Semester 2. **Classes:** 2 lee, 2 sem, 3 field/w. Assessment: 2000 w assignment, seminar presentation, field report.
This unit investigates the range of multipliers and impacts that resource development brings to the regions in which it is located. The unit deals with economic, social and political aspects of resource regions, investigating both direct and indirect spatial distributions of costs and benefits and means by which these are dealt with in specific contexts. The unit draws on examples of mining, forestry, tourism and dams to develop skills in resource impact analysis. The critical social science approach is designed to give planners, advocacy groups and resource developers tools with which to anticipate and act on regionally specific impacts of resource development. The unit is taught through a combination of reading-based seminars, lectures and a field visit.

ENVI 5803 **Law and the Environment**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. Dr Gerry Bates. **Session:** Semester 1. **Classes:** Two lectures per week. **Assessment:** Essays.
This unit of study provides an overview of Australian and international law as it pertains to the environment. It looks at a number of environmental issues at the various levels of analysis, policy making, implementation of policy and dispute resolution. It also provides a broad background to political and economic issues as they related to the legal issues. This unit of study involves lecture material and an essay on policy issues.

ENVI 5805 **The Urban Environment and Planning**
6 credit points. Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. Dr John Dee. **Session:** Semester 1. **Classes:** Eight lectures and eight 2 hour seminars per semester. Assessment: Report and short research paper.
The aim of this unit of study is to introduce the concepts and procedures which are relevant to the application of scientific analysis to the formulation of urban and regional development policy and strategies.

ENVI 5808 **App Ecology for Environmental Scientists**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), Grad Cert App Sc (Wild Hlth & Pop Man), M Envi Sci Law, PG Coursework Exchange. Dr Dieter Hochuli. **Session:** Semester 2. **Classes:** Three lectures per week. **Assessment:** Essay and presentation.
NB: This is a compulsory unit for all levels of the Applied Science (Environmental Science) program
This unit of study compliments ENVI 5705, and covers in depth the concerns of modern ecology pertaining to both marine and terrestrial creatures. An understanding of the complex issue of biodiversity and impact of the Threatened Species Conservation Act is also provided.

ENVI 5809 **Computer Modelling** & **Resource Management**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), M Envi Sci Law, M Sc, PG Coursework Exchange. Dr David Chapman. **Session:** Semester 1. **Classes:** Six workshops. Assessment: Report.
The concept and use of computer modelling in natural resource management is introduced in this unit of study, which is aimed particularly at non-programmers.

ENVI 5903 **Sustainable Development**
6 credit points. Grad Cert App Sc (Enviro Sci), Grad Cert Lib Stud, Grad Dip Lib Stud, M Lib Stud, PG Coursework Exchange. Dr Phil McManus. **Session:** Semester 2. **Classes:** Four lectures per week for seven weeks. **Assessment:** Essay and presentation.
This unit of study demonstrates the history and contested understandings of the concept of sustainable development. It applies these concepts to explore important environmental science issues such as population, water management sustainable cities, rural development, industrial ecology, and energy issues. The unit concludes by presenting a range of future scenarios and encouraging students to

develop their own vision of sustainability at the global and other scales, and to communicate their means of achieving this sustainability vision.

ENVI 5904 **Understanding Environmental Uncertainty**
6 credit points. Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. Dr Craig Styan. **Session:** Semester 2. **Assessment:** Tutorials, oral presentations and written reports.
No assessment of potential environmental impacts is possible without relevant information about the ecological consequences. This unit is for those without a science degree, to explain the need to quantify and what are relevant measures. Describing and understanding uncertainty will be explained in the context of precautionary principles. Issues about measuring biodiversity and the spatial and temporal problems of ecological systems will be introduced.

GEOG 5001 **Geographic Information Science A**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), M Sc, PG Coursework Exchange. Dr David Chapman. **Session:** Semester 1, Semester 2. **Classes:** Six workshops. **Assessment:** Report.
This unit of study gives an overview of basic spatial data models, and enables students to understand the import and export of data to and from a geographical information system (GIS). The manipulation of spatial data at a level appropriate to planning or locational applications, and the development of thematic maps from diverse data layers, will be addressed.

GEOG 5002 **Geographic Information Science B**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. Dr Eleanor Bruce. **Session:** Semester 2. **Classes:** 2 lee, 1 tut, 3 prac/w. **Assumed Knowledge:** to standard of GEOG 5001. **Assessment:** 2500 w assignment, seminar presentation, tutorial reports, WebCT quiz.
This course will provide the conceptual background to more advanced GIS analysis applications and spatial reasoning methods in the context of contemporary environmental issues. The course is designed to provide an understanding of spatial analysis techniques available within a GIS environment, explore a diversity of both social and physical environmental applications and address emerging issues in GIS research. A range of topics will be introduced including field based capture of spatial information, spatial data structures, surface modelling, visibility analysis, hydrological modeling, network analysis, spatial data uncertainty and social GIS.
Conceptual material presented in lectures and tutorial workshops will be placed in an applied context through a series of laboratory and field sessions designed to strengthen practical understanding and awareness of GIS methods.

GEOG 5004 **Environmental Mapping and Monitoring**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. **Session:** Semester 2. **Prerequisites:** GEOG5001.

Environmental Science: other units

For detailed descriptions of optional units see the listings under the appropriate headings of postgraduate Degrees in Science and the Applied Science articulated coursework programs. Special attention should be paid to any pre-requisite studies that may be required. Other options are possible with permission of the Director of Environmental Science.

Microscopy and Microanalysis

Graduate Certificate in Applied Science (Microscopy and Microanalysis)
Graduate Diploma in Applied Science (Microscopy and Microanalysis)
Master of Applied Science (Microscopy and Microanalysis)

Course Overview
The Graduate Certificate in Applied Science (Microscopy and Microanalysis), Graduate Diploma in Applied Science (Microscopy and Microanalysis) and Master of Applied Science (Microscopy and Microanalysis) are articulated award courses that provide a professional qualification to microscopists for industry, research, medical science and education. The course develops and enhances skills in specimen preparation, operation of microscopes and analytical equipment, interpretation of microscopical images and microanalysis.

Course Outcomes
The aim of this articulated coursework program is to provide students with a coordinated and interdisciplinary approach to microscopy and microanalysis, thus developing expertise to recognise and solve a broad range of problems in life and material sciences. Upon the completion of the Graduate Certificate, graduates will possess practical and theoretical background in a wide variety of microscopy, microanalysis and specimen preparation techniques for the materials or life sciences. The Graduate Diploma will add more specialist knowledge in particular areas of interest or relevance. In addition, the Masters will provide experience in designing, carrying out and completing an independent project and report.

Admission Requirements
Applicants for the Graduate Certificate in Applied Science (Microscopy and Microanalysis) should have a Bachelor of Science, Bachelor of Applied Science, Bachelor of Engineering, or equivalent qualifications or experience. Applications will also be considered from those with a Bachelor of Arts who wish to acquire microscopy and microanalysis skills for such areas as archaeology, history of art and museum studies.

Applicants for the Graduate Diploma in Applied Science (Microscopy and Microanalysis) should have a Bachelor of Science, Bachelor of Applied Science, Bachelor of Engineering or equivalent degree or have completed the Graduate Certificate in Applied Science (Microscopy and Microanalysis). Applications will also be considered from those with a Bachelor of Arts who wish to acquire microscopy and microanalysis skills for such areas as archaeology, history of art and museum studies.

Applicants for the Master of Applied Science (Microscopy and Microanalysis) should have a Bachelor of Science, Bachelor of Applied Science, Bachelor of Engineering or equivalent degree, or have completed the Graduate Diploma in Applied Science (Microscopy and Microanalysis) at Credit level.

Course Requirements
To qualify for award of the Graduate Certificate in Applied Science (Microscopy and Microanalysis), candidates must complete 12 credit points from core units and 12 credit points from optional units shown below.

To qualify for award of the Graduate Diploma in Applied Science (Microscopy and Microanalysis), candidates must complete 36 credit points, 12 from core units and 24 from optional units shown below.

To qualify for award of the Master of Applied Science (Microscopy and Microanalysis), candidates must complete 48 credit points, 24 from core units, 12 from optional units and 12 from an independent project and report.

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

After completing 24 credit points of coursework, students who have Distinction average results or above across all units of study attempted may be eligible for the Research path subject to the approval of the Director of the Key Centre for Microscopy and Microanalysis and the Dean. Students who pursue the Research path must study MCAN5201, MCAN5202, MCAN5203 and MCAN5210.

Credit for previous study
See Graduate Certificate, Graduate Diploma and Master of Applied Science in this chapter or Course Resolutions in chapter 7.

Unit of study		Core/option
All units are worth 6 credit points		
Graduate Certificate, Graduate Diploma and Masters Core units		
MCAN 5005	Introductory Microscopy & Microanalysis	C
MCAN 5006	Electron Microscopy	C
Graduate Certificate, Graduate Diploma and Masters Optional units		
MCAN 5101	Confocal & Fluorescence Microscopy	0
MCAN 5102	Biological Specimen Preparation	0
MCAN 5103	Materials Preparation and Microscopy	0
MCAN 5104	Image Analysis	0
MCAN 5110	Nanostructural Analysis of Materials	0
MCAN 5111	Microscopy of Biomolecular Processes	0
MCAN 5112	Advances in Modern Microscopy	0
MCAN 5210	Research Methodology	0
Masters Additional Core units		
MCAN 5201	Project and Report A	**C**
MCAN 5202	Project and Report B	**C**
Masters, Research path, Additional Core units		
MCAN 5203	Project and Report Part C	**C**
MCAN 5210	Research Methodology	**C**

MCAN 5005 **Introductory Microscopy & Microanalysis**
6 credit points. Grad Cert App Sc (Microsc & Microan), Grad Dip App Sc (Microsc & Microan). **Session:** Semester 1, Semester 2.
The course provides an introduction to the fundamental principles of optics and the related principles of spectroscopy that are commonly used in microscopy and microanalysis. Students are introduced to a variety of imaging and analysis techniques and their role in both biotechnology and the technology of materials, as relevant to laboratory-professionals and researchers. An emphasis on light-optical microscopy and related imaging modes is developed.

MCAN 5006 **Electron Microscopy**
6 credit points. Grad Cert App Sc (Microsc & Microan), Grad Dip App Sc (Microsc & Microan). **Session:** Semester 1, Semester 2.
Trains participants, with no prior knowledge of electron microscopy, to become operators of scanning and transmission electron microscopes. Participants are given theoretical and practical understanding of the operation and construction of the microscope and how to obtain the optimum performance from it in routine operation.

MCAN 5101 **Confocal & Fluorescence Microscopy**
6 credit points. Grad Cert App Sc (Microsc & Microan), Grad Dip App Sc (Microsc & Microan). **Session:** Semester 1, Semester 2. **Prerequisites:** MCAN 5005.
Introduces the general principles of confocal microscopy and training in the use of the confocal microscope. It covers the theory behind confocal microscopy, the instrumentation and its applications. Develops knowledge and skills in specimen preparation for biological and medical applications of optical and confocal microscopes - immunochemistry, cell loading, GFP.

MCAN 5102 **Biological Specimen Preparation**
6 credit points. Grad Cert App Sc (Microsc & Microan), Grad Dip App Sc (Microsc & Microan). **Session:** Semester 1, Semester 2.
Develops knowledge and skills in the fundamentals of specimen preparation for light microscopy. Techniques covered will include tissue processing for paraffin microtomy and an introduction to histochemical staining methods. In addition this unit will present the theory and practical skills of routine specimen preparation techniques used for electron microscopy in the biological sciences including fixing, embedding, sectioning, drying, coating and staining techniques. An introduction to cryotechniques and immuno methodologies is included.

MCAN 5103 **Materials Preparation and Microscopy**
6 credit points. Grad Cert App Sc (Microsc & Microan), Grad Dip App Sc (Microsc & Microan), M E S (New Mat Tech). **Session:** Semester 1, Semester 2.
Gives practical training in the preparation of specimens for electron microscopy from a wide range of materials, including: metals, semiconductors, powders, ceramics and polymers. A comprehensive range of preparation techniques will be covered, including: electropolishing, tripod polishing, ion milling, dimple grinding, ultramicrotomy, cleavage and focused ion beam (FIB). Aspects of transmission electron microscopy specific to inorganic materials, such as crystallography, diffraction patterns and diffraction contrast will be introduced.

MCAN 5104 **Image Analysis**
6 credit points. Grad Cert App Sc (Microsc & Microan), Grad Dip App Sc (Microsc & Microan), M Sc. **Session:** Semester 1, Semester 2.
This unit of study covers the nature and processing of images and the extraction of quantitative data from them. Participants will develop a sound working knowledge of both traditional stereology techniques and modern digital image processing & analysis. Emphasis is placed on an understanding of both the strengths and the limitations that are inherent in image data, and the technology applied to it. Topics in this module include: a general review of image acquisition, filters and transforms, segmentation methods, calibration of hardware for analysis, extraction of simple features from images, advanced feature extraction from images, limitations of measurement and a general overview of stereology, including geometric probability, density estimation and sampling.

MCAN 5110 **Nanostructural Analysis of Materials**
6 credit points. Grad Cert App Sc (Microsc & Microan), Grad Dip App Sc (Microsc & Microan). **Session:** Semester 1, Semester 2. **Assumed Knowledge:** MCAN5005 or equivalent.
This unit provides students with knowledge and training so that they may explore the relationships between the structure and properties of materials. The unit covers the principles and practice of materials characterisation with an emphasis on techniques for the quantitative determination of the nanoscale structure and chemistry of materials. Topics include diffraction, contrast theory in transmission electron microscopy, analytical electron microscopy, other X-ray, ion beam and scanned probe methodologies.

MCAN 5111 **Microscopy of Biomolecular Processes**
6 credit points. Grad Cert App Sc (Microsc & Microan), Grad Dip App Sc (Microsc & Microan). **Session:** Semester 1, Semester 2. **Assumed Knowledge:** MCAN 5101 or MCAN 5102 or equivalent.
This unit covers the principles and practice of advanced microscopy techniques for probing cellular and biomolecular processes. It will cover techniques to investigate cellular processes at the molecular and protein level including, intracellular signalling, uptake and metabolism of drugs/carcinogens/exogenous material and localisation of enzymes/proteins associated with cells. Topics may include: advanced confocal microscopy, immunolabelling and associated cryoprocedures for EM, micro and nano-analytical procedures for biological applications.

MCAN 5112 **Advances in Modern Microscopy**
6 credit points. Grad Cert App Sc (Microsc & Microan), Grad Dip App Sc (Microsc & Microan). **Session:** Semester 1, Semester 2.
This unit provides students with knowledge of and training in the application of the very latest advances in microscopy techniques

and technologies. Students will examine in detail advances that are occurring in several areas of current microscopy practice and obtain knowledge of both the specific operational characteristics and the associated theory of newly developed instruments. Course content will maintain a focus on cutting-edge techniques that reflect the dynamic advances occurring in microscopy technologies.

MCAN 5201 **Project and Report A**
6 credit points. M Appl Sc (Microsc & Microan). **Session:** Semester 1, Semester 2.
Gives students the opportunity to extend the practical work encountered in other modules, and gain skills in carrying out and writing up a research project. Students will choose topics in consultation with members of academic staff and complete project work under supervision. Students also need to enrol in MCAN5202.

MCAN 5202 **Project and Report B**
6 credit points. M Appl Sc (Microsc & Microan). **Session:** Semester 1, Semester 2. **Corequisites:** MCAN 5201..
See MCAN 5201.

MCAN 5203 **Project and Report Part C**
6 credit points. Grad Cert App Sc (Microsc & Microan), Grad Dip App Sc (Microsc & Microan). **Session:** Semester 2, Semester 1. **Corequisites:** MCAN 5201 Project and Report A
MCAN 5202 Project and Report B
MCAN 5210 Research Methodology.
NB: Research path only
This unit of study is an extension of Project and Report A and B and is only for those students approved for the Research path. Students will further extend their research, as well as formulating a literature review and a research plan and incorporating referee's comments into the final report. Students also need to enrol in or have completed MCAN5201, MCAN5202 and MCAN 5210.

MCAN 5210 **Research Methodology**
6 credit points. Grad Cert App Sc (Microsc & Microan), Grad Dip App Sc (Microsc & Microan). **Session:** Semester 1, Semester 2.
NB: Core for research path, optional for Masters
This unit covers the principles and practice of research methodology. Topics included: literature and database searches; citing and referencing; research proposals; safety, risk assessment and ethics; experimental design and documentation; statistics, errors and data analysis; and written and oral communication.

Molecular Biotechnology

Graduate Certificate in Applied Science (Molecular Biotechnology)
Graduate Diploma in Applied Science (Molecular Biotechnology)
Master of Applied Science (Molecular Biotechnology)

Course Overview and Outcomes
The Graduate Certificate in Applied Science (Molecular Biotechnology), Graduate Diploma in Applied Science (Molecular Biotechnology) and Master of Applied Science (Molecular Biotechnology) are articulated programs intended for industry employees and those experienced in related fields to obtain relevant knowledge in molecular biotechnology. They include teaching in current and innovative areas and provide specialisations with attractive prospects for retraining and employment and for further education. These programs cover new and leading edge high technologies that provide education in relevant aspects of biology, biochemistry, chemistry, food science and technology, agricultural science, bioinformatics and information bioscience. They aim to provide a basic knowledge and skills base emphasising scientific applications. The courses also extend a professional graduate education for scientists and technologists already working in these areas. Students will be exposed to a solid grounding in molecular biotechnology including an appreciation of social and ethical implications. This professional development award course is particularly designed for those seeking training in this expanding high technology area.

Admission Requirements

Applicants for the Graduate Certificate in Applied Science (Molecular Biotechnology) should hold a Bachelor's degree with credit average results in substantial study in areas of relevance to Molecular Biotechnology, such as biochemistry, biology, chemistry, genetics or molecular biology, or previous experience in a relevant area that is considered to demonstrate the knowledge and aptitude required to undertake this award course.

Applicants for the Graduate Diploma in Applied Science (Molecular Biotechnology) should hold a Bachelor's degree with credit average results in substantial study in areas of relevance to Molecular Biotechnology, such as biochemistry, biology, chemistry, genetics or molecular biology, or previous experience in a relevant area that is considered to demonstrate the knowledge and aptitude required to undertake this award course, or have completed the Graduate Certificate in Applied Science (Molecular Biotechnology) at the University of Sydney without failing any units of study.

Applicants for a Master of Applied Science (Molecular Biotechnology) should hold a Bachelor's degree with credit average results in substantial study in areas of relevance to Molecular Biotechnology, such as biochemistry, biology, chemistry, genetics or molecular biology; or have completed te Graduate Certificate in Applied Science (Molecular Biotechnology) at the University of Sydney, without failing any units of study; or have completed the Graduate Diploma in Applied Science (Molecular Biotechnology) at the University of Sydney without failing more than 6 credit points of study.

Course Requirements
To qualify for award of the Graduate Certificate in Applied Science (Molecular Biotechnology) candidates must complete 24 credit points of core units of study: MOBT 5101 and MOBT 5102 as described in the table below. The design of these units allows flexibility for students who are working and is geared toward industry needs.

To qualify for award of the Graduate Diploma in Applied Science (Molecular Biotechnology) candidates must complete 36 credit points of units of study including 24 credit points of core units of study (MOBT 5101 and MOBT 5102) and 12 credit points of optional units of study as described in the table below.

To qualify for award of the Master of Applied Science (Molecular Biotechnology) candidates must complete 48 credit points of units of study including 36 credit points of core units of study (MOBT 5101, MOBT 5102, MOBT 5203 and MOBT 5303) and 12 credit points of optional units of study as described in the table below.

Optional Units
Students may select optional units from any of the other Graduate Diploma or Masters courses offered by the Faculty, subject to timetable constraints. These optional units are listed in the surrounding pages of this handbook. The following list of relevant units may assist with your selection:

BIOL5001 Molecular Biology and Inheritance

ENVI5705 Ecology Principles for Environ Scientists

MCAN5005 Microscopy and Optical Microscopes

MOBT5201 Applied Molecular Biotech A (Theory)

Please note, the unit MOBT 5303 is not an allowable elective for Graduate Diploma students.

Credit for previous study
See Graduate Certificate, Graduate Diploma and Master of Applied Science in this chapter or Course Resolutions in chapter 7.

Unit of study		Core/option
Unless otherwise indicated, all units are worth 12 credit points		
Core units all degrees		
MOBT 5101	Applied Molecular Biotechnology A	C
MOBT 5102	Applied Molecular Biotechnology B	C

Core units Masters only		
MOBT 5203	Applied Molecular Biotech C (Theory) (6credit points)	C/O
MOBT 5303	Applied Molecular Biotech C (Project) (6 credit points)	C/O

MOBT 5101 **Applied Molecular Biotechnology A**
12 credit points. Grad Cert App Sc (M B T), Grad Dip App Sc (M B T), PG Coursework Exchange. **Session:** Semester 1.
This unit of study provides a solid foundation for education and training in applied molecular biotechnology. Classes emphasise molecular biology and genetics combined with essential aspects underscoring modern molecular biotechnology.

MOBT 5102 **Applied Molecular Biotechnology B**
12 credit points. Grad Cert App Sc (M B T), Grad Dip App Sc (M B T), PG Coursework Exchange. **Session:** Semester 2.
Applied molecular biotechnology B broadens knowledge of and training in applications of the field. Key areas of molecular biology and genetics are combined with studies embracing major issues in modern molecular biotechnology, and are illustrated by examples and case studies.

MOBT 5203 **Applied Molecular Biotech C (Theory)**
6 credit points. MAppl Sc (M B T), PG Coursework Exchange. Prof Richard Christopherson, Dr Rachel Codd, Dr Kevin Downard, Dr Neville Firth, Dr David Langley, Dr John Rasko, Dr Michael Vitale, Prof Tony Weiss. **Session:** Semester 1. **Classes:** 2 hrs lectures and 1 hr tutorial per week. **Prohibitions:** MOBT5103. **Assessment:** 1 hr essay/exam (40%) and 2 x 1 hr WebMCQ quizzes (30% each).
NB: Available to Master of Applied Science (Molecular Biotechnology) students only
This unit of study broadens knowledge of and training in applications of the field. It familiarises students with the business aspects of biotechnology including taking research from the laboratory to the market. It provides a thorough grounding in techniques used in Molecular Biotechnology. These studies are an important foundation for MOBT5303 which is taken concurrently or following this unit. Additionally, classes cover the key medical areas of computational drug design and optimisation and molecular diagnostics and human health.

MOBT 5303 **Applied Molecular Biotech C (Project)**
6 credit points. M Appl Sc (M B T), PG Coursework Exchange. Dr Rachel Codd, Dr Kevin Downard, Dr Neville Firth, Prof Tony Weiss. **Session:** Semester 1, Semester 2. **Prerequisites:** MOBT (5101 or 5102). **Corequisites:** MOBT5203. **Prohibitions:** MOBT5103. **Assessment:** Report (60%) and individual/group poster and presentation (40%).
NB: This unit is available to students in the Master of Applied Science (Molecular Biotechnology) only.
This unit of study provides students with the opportunity to undertake hands-on experience in the biotechnology industry. This will typically involve placement in an approved industry partner's facility on a part-time basis or a case study project conducted in association with an industry affiliate. It assumes students have previously studied or are concurrently studying MOBT5203. Entry to an industry placement is limited by a quota and the availability of facilities and projects. Results obtained in MOBT units of study undertaken in the preceding semester (in theory and practical components) will decide whether students are assigned to placements or case study projects. All students enrolled in this unit are required to complete an industry placement suitability survey which will also be taken into consideration. Assessment is based on a student's performance in their placement or project, a report, poster and presentation.

Neuroscience

Graduate Certificate in Applied Science (Neuroscience)
Graduate Diploma in Applied Science (Neuroscience)
Master of Applied Science (Neuroscience)

These award courses are not available to new students in 2006.

Course overview
The Graduate Certificate in Applied Science (Neuroscience), Graduate Diploma in Applied Science (Neuroscience) and Master of Applied Science (Neuroscience) are articulated programs that allow flexible combinations of units of study. The programs cover basic concepts in neuroscience together with advanced treatment of most major current research areas in neuroscience, particularly those with medical and other potential applications, and an introduction to related developments in other disciplines.

Course Outcomes
The study of the brains and nervous systems of living creatures represents one of the most exciting and fast moving fields in 21st century science. It is also one that is having a considerable impact on attempts to solve major problems in health, including various neural diseases, current social problems such as addiction, and longer term social trends such as aging. The programs are designed both for graduates already working in a field where development of their expertise in at least some aspects of neuroscience is important and for recent graduates who wish to acquire a solid and broad grounding in this area.

Many professionals, particularly in health-related areas, find that they need to update or broaden their knowledge and understanding of the structure and function of the nervous system. Traditionally such training has been provided within individual departments, such as anatomy, physiology, pharmacology or psychology, and consequently has tended to be narrow in focus. The present programs have from the outset been designed to be inter-disciplinary; most units of study are taught by staff from at least three different departments. This is to meet the aim of providing a broad and comprehensive treatment of neuroscience.

Upon completion of the Graduate Certificate, graduates will have a solid grounding in basic principles of neuroscience and more specialised understanding of four different areas. This is supplemented in the Diploma by inclusion of a fifth area and by acquisition of some project skills by working on either a library- or laboratory-based project. Extension of these project skills is obtained during completion of the Masters by working on a total of three unrelated projects, of which two would normally be laboratory-based.

Admission Requirements
Applicants for Applied Science (Neuroscience) should either hold a Bachelor's degree in Science or in a field of study appropriate for expansion into Neuroscience, or possess experience which is considered to demonstrate the knowledge and aptitude required to take this award course. Students may elect to begin with a Graduate Certificate or Graduate Diploma and build on these to gain a higher qualification, up to Master, within the articulated series. Students may also elect to enrol directly into the Masters program.

Course Requirements
To qualify for award of the Graduate Certificate in Applied Science (Neuroscience) candidates must complete 24 credit points of approved units of study as described in the table below.

To qualify for award of the Graduate Diploma in Applied Science (Neuroscience) candidates must complete 36 credit points of approved units of study of which 6 credit points are project based units of study, as described in the table below.

To qualify for award of the Master in Applied Science (Neuroscience) candidates must complete 48 credit points of approved units of study, of which 18 credit points are from project based units of study in Neuroscience, as described in the table below.

Normally a unit of study is available for only 1 semester each year. Not all units of study are available every semester. The Faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

Credit for previous study
See Graduate Certificate, Graduate Diploma and Master of Applied Science in this chapter or Course Resolutions in chapter 7.

Unit of study	
All units are worth 6 credit points	
Optional units all degrees	
NEUR5101	Neurobiology of Addiction
NEUR5102	Neuroscience of Aging
NEUR5103	Brain Development
NEUR5104	Psychobiology of Learning and Memory
NEUR5105	Movement and Motor Control
NEUR5106	Pain
NEUR5107	Neurobiology of Psychoses
NEUR5108	Visual Neuroscience
Project units Graduate Diploma and Masters only	
NEUR 5001	Neuroscience Library Project
NEUR 5002	Neuroscience Laboratory Project A
NEUR 5003	Neuroscience Laboratory Project B
NEUR 5004	Neuroscience Laboratory Project C

NEUR 5001 **Neuroscience Library Project**
6 credit points. Grad Dip App Sc (Neuro Sc). **Session:** Semester 1, S2 Late Int, Semester 2. **Prerequisites:** 12 credit points from NEUR (5101, 5102, 5103, 5104, 5105, 5106, 5107, 5108).
This provides the opportunity to develop knowledge gained from units of study on a specialised topic. The topic and nature of supervision will be arranged between the student and an appropriate supervisor, subject to the approval of the Co-ordinator of the Neuroscience Program. This unit of study is available only to students enrolled in the Graduate Diploma of Applied Science (Neuroscience) or in the Master in Applied Science (Neuroscience). It would normally be available only after a student has completed two units of study in the Neuroscience program or equivalent units of study approved by the Dean.

NEUR 5002 **Neuroscience Laboratory Project A**
6 credit points. Grad Dip App Sc (Neuro Sc). **Session:** S2 Late Int, Semester 1, Semester 2. **Prerequisites:** 24 credit points from NEUR (5101, 5102, 5103, 5104, 5105, 5106, 5107, 5108).
This provides the opportunity to develop laboratory skills by participation in a research project on a specialised topic. The topic and nature of supervision will be arranged between the student and an appropriate supervisor, subject to the approval of the Co-ordinator of the Neuroscience Program. This unit of study is available only to students enrolled in the Graduate Diploma of Applied Science (Neuroscience) or in the Master in Applied Science (Neuroscience). It would normally be available only after a student has completed four units of study in the Neuroscience program or equivalent units of study approved by the Dean.

NEUR 5003 **Neuroscience Laboratory Project B**
6 credit points. Grad Dip App Sc (Neuro Sc). **Session:** S2 Late Int, Semester 1, Semester 2. **Prerequisites:** NEUR 5002.
This is similar to NEUR 5002, but would involve a different supervisor and a topic in a different discipline from those for the project a student undertook for NEUR 5002. A student is normally required to complete NEUR 5002 before enrolling in NEUR 5003.

NEUR 5004 **Neuroscience Laboratory Project C**
6 credit points. Grad Dip App Sc (Neuro Sc). **Session:** S2 Late Int, Semester 1, Semester 2. **Prerequisites:** NEUR 5002 and 5003.
This is similar to NEUR 5002, but would involve a different supervisor and a topic in a different discipline from those for the projects a student undertook for NEUR 5002 and NEUR 5003. A student is normally required to complete NEUR 5002 and NEUR 5003 before enrolling in NEUR 5004.

NEUR 5101 **Neurobiology of Addiction**
6 credit points. Grad Cert App Sc (Neuro Sc), PG Coursework Exchange. **Session:** SI Late Int, S2 Late Int, Semester 2.
The goal of this course is to develop knowledge of the aspects of neuroscience that underpin current understanding of drug addiction. It examines patterns of use, prevalence, harms and social costs of the major addictive drugs: opioids, psychostimulants, alcohol, nicotine, and cannabis. Major topics include common features of addictive drugs such as the psychology and neuroanatomy of reward and reinforcement, as well as the particular molecular and neurochemical targets of individual drugs and the molecular and cellular mechanisms of tolerance and dependence. Finally, it will examine current treatment of addictive disorders.

NEUR 5102 **Neuroscience** of **Aging**
6 credit points. Grad Cert App Sc (Neuro Sc), PG Coursework Exchange. **Session:** S2 Late Int, Semester 1.
The unit of study will examine changes with age in the structure of the brain and the various forms of neuropathology and types of dementia that can occur. Models of Alzheimer's disease are covered, from tissue culture and cell biology to transgenic mice. Topics also include aspects of the neuropsychology of aging, including testing for different types of dementia, and the use of PET and MRI scans to assess aging of the brain.

NEUR 5103 **Brain Development**
6 credit points. Grad Cert App Sc (Neuro Sc), PG Coursework Exchange. **Session:** Semester 1, S2 Late Int.
The topics covered will include: neuronal induction; mechanisms of cell generation and migration; gene expression and environmental factors in the determination of cell fate; the growth cone; general development of early neural pathways; transient neurones; the external environment and neonatal development; cell death in the developing brain; glial cells; early vascular invasion; and the process of regeneration during development and in adulthood.

NEUR 5104 **Psychobiology of Learning and Memory**
6 credit points. Grad Cert App Sc (Neuro Sc), UG Study Abroad Program. **Session:** SI Late Int, S2 Late Int, Semester 2.
The topics covered will include: types of learning and of memory; current models at a psychological level; procedures for testing animal models of human learning and memory; memory disorders (amnesia); clinical and brain scan evidence on neural structures involved in learning and memory; synaptic plasticity and long term potentiation; pharmacological factors; neurological diseases affecting human memory.

NEUR 5105 **Movement and Motor Control**
6 credit points. Grad Cert App Sc (Neuro Sc), PG Coursework Exchange. **Session:** SI Late Int, S2 Late Int, Semester 2.
Major topics include: control of contraction in muscle cells; the neuromuscular junction; organization and recruitment of the motor neuron pool; action potential propagation in myelinated nerves; activation of motor neurons in antagonist muscles; sensory afferents and reflexes; neuronal integration of excitatory and inhibitory synaptic inputs to the motor neuron; development of central pattern generators in the spinal cord; motor neuron diseases; descending projections from the brain; disorders affecting motor projections, including multiple sclerosis and paraplegia; learning to move, the development of gross and skilled movements, and training following damage to the motor system.

NEUR 5106 **Pain**
6 credit points. Grad Cert App Sc (Neuro Sc), PG Coursework Exchange. **Session:** SI Late Int, S2 Late Int, Semester 2.
This unit will look at concepts of pain, including the view that pain is not only sensory event, but also a motivational state. It will evaluate current knowledge of transduction mechanisms and central rep-

resentations of acute pain. Further topics include: the change from acute pain to chronic pain; mechanisms and central representations of chronic pain; central modulation of acute and chronic pain; and neuropharmacological research on endogenous analgesia.

NEUR 5107 **Neurobiology of Psychoses**
6 credit points. Grad Cert App Sc (Neuro Sc). **Session:** SI Late Int, S2 Late Int.
In relation to schizophrenia, this unit of study will examine: classification of symptoms; different types of schizophrenia; brain development and thought processes; the use of imaging techniques such functional MRI; changes in brain anatomy, neural pathways and neurotransmitters; the dopamine hypothesis and the mechanism of action of anti-psychotics; the role of other neurotransmitter systems; genetics and drug-induced changes in gene expression; and clinical treatment.
In relation to depression the unit of study will examine: the distinction between depression and bipolar disorders; NA and 5HT pathways and their function in the brain; the molecular and cellular mechanisms of anti-depressants, and their use in the clinic; cognitive behavioural therapies. Finally, it will consider social and legal issues associated with both schizophrenia and depression.

NEUR 5108 **Visual Neuroscience**
6 credit points. Grad Cert App Sc (Neuro Sc), PG Coursework Exchange. **Session:** SI Late Int, S2 Late Int, Semester 2.
After providing an overview of the visual system and its functions, the specific topics covered by this unit of study will include: the optics, image properties, and contrast properties of visual stimuli; colour vision and defects; the development of the visual system; retinal mechanisms such as transduction, synaptic action and receptive fields; organization of optic pathways, including streams, columns, areas and maps; the neural basis of form perception, from centre/surround to models from information technology; visual perception of motion, from magnocellular to Movshon; binocular vision, including stereopsis, binocular single vision, and interocular suppression; and visual loss, including scotomas, achromatopsia, akinetopsia and acatoradog.

Nutrition and Dietetics

Graduate Certificate in Applied Science (Nutrition and Dietetics)
Graduate Diploma in Applied Science (Nutrition and Dietetics)
Master of Applied Science (Nutrition and Dietetics)

These award courses are not available to new students in 2006.

Course overview
The aim of this articulated coursework and clinical program is to provide graduate dietitians who have a minimum of three years experience in the workforce, with a coordinated approach to advanced nutritional support in the clinical setting. Upon completion of the Graduate Certificate, Graduate Diploma or Masters, graduates will have a broad understanding of advanced nutritional support (the core unit of study). Optional units of study will provide a wider range of advanced nutritional support in the disciplines of critical care, gastroenterology (both medical and surgical), liver disease, burns, gerontology and developmental disabilities. This course has core and optional units of study that will produce graduates with skills in the advanced nutritional support. It is offered on a part-time and a full-time basis to local and international students.

Admission requirements
Applicants for the Graduate Certificate in Applied Science (Nutrition and Dietetics) should hold a first degree in Science with a major in Nutrition and Dietetics, have a minimum of three years professional experience and be eligible for membership of the Dietitians Association of Australia.

Applicants for the Graduate Diploma in Applied Science (Nutrition and Dietetics) should hold a first degree in Science with a major in Nutrition and Dietetics, have a minimum of three years professional experience, be eligible for membership of the Dietitians Association of Australia and have completed the requirements of the Graduate Certificate in Applied Science (Nutrition and Dietetics).

Applicants for the Master in Applied Science (Nutrition and Dietetics) should hold a first degree in Science with a major in Nutrition and Dietetics, have a minimum of three years professional experience, be eligible for membership of the Dietitians Association of Australia and have completed the requirements of the Graduate Diploma in Applied Science (Nutrition and Dietetics).

Course Requirements
To qualify for the award of the Graduate Certificate in Applied Science (Nutrition and Dietetics), candidates must complete 24 credit points from the two core units of study and two optional units of study.

To qualify for the award of the Graduate Diploma in Applied Science (Nutrition and Dietetics), candidates must complete 36 credit points from the two core units of study and four optional units of study.

To qualify for the award of the Master in Applied Science (Nutrition and Dietetics), candidates must complete 48 credit points from the two core units of study and six optional units of study.

Not all units of study will be available every semester. The core coursework and clinical placement units of study must be completed first in that order. Subsequent optional units of study (depending on availability) are to be completed in the same order, coursework followed by clinical placement unit.

Credit for previous study
This course is profession-specific and is the first to be offered in Australia. It is unlikely that there will be any units of study that would be appropriate for the granting of credit.

See Graduate Certificate, Graduate Diploma and Master of Applied Science in this chapter or Course Resolutions in chapter 7.

Unit of study		Core/option
Unless otherwise indicated, all units are worth 6 credit points		
Core units all degrees		
NTDT 6001	Advanced Nutritional Support (Theory)	C
NTDT6011	Advanced Nutritional Support (Clinical)	C
Elective units all degrees		
NTDT 6002	Nutrition Support in Critical Care	0
NTDT 6012	Critical Care Nutritional Support	0
NTDT 6003	Medical Gastroenterology (Theory)	0
NTDT 6013	Medical Gastroenterology (Clinical)	0
NTDT 6004	Surgical Gastroenterology (Theory)	0
NTDT 6014	Surgical Gastroenterology (Clinical)	0

Psychology of Coaching

Graduate Certificate in Applied Science (Psychology of Coaching)
Graduate Diploma in Applied Science (Psychology of Coaching)
Master of Applied Science (Psychology of Coaching)

Course Overview
The Master of Applied Science (Psychology of Coaching) is an articulated postgraduate program which teaches the applied science of human performance enhancement and coaching. Coaching psychology sits at the intersection of counselling, clinical and organisational psychology and focuses on working with non-clinical populations. This program provides students with a sound grounding in the theoretical and methodological aspects of coaching and coaching psychology and teaches fundamental applied coaching skills.

Students enrolled in the Graduate Certificate in Applied Science (Psychology of Coaching) may only enrol part-time. Study for the Graduate Diploma in Applied Science (Psychology of Coaching) and the Master of Applied Science (Psychology of Coaching) may be undertaken in either part-time or full-time mode. The progression sequence for part-time students is as follows: First semester of enrolment PSYC 4721 and PSYC 4722; second semester of enrolment and following semesters, PSYC 4724 and remaining elective units to suit the individual student's needs and interests and to meet degree requirements. For students studying full time, the progression sequence is as follows: First semester of enrolment PSYC 4721; PSYC 4722 and other elective units, second semester of enrolment PSYC 4724 and remaining elective units to suit the individual student's needs and interests and to meet degree requirements. PSYC 4721 and PSYC 4722 must be completed before enrolling in PSYC 4724. If PSYC 4741 and PSYC 4722 are taken in separate semesters, students should enrol in PSYC 4721 before PSYC 4722.

Eligibility for admission

An applicant for admission will satisfy the admission requirements for the Graduate Certificate in Applied Science or the Graduate Diploma in Applied Science or the Master of Applied Science and:

(1) have a minimum 3 year sequence in Psychology and

(2) relevant work experience. Relevant work experience may include counselling, experience in organisational learning and development, management experience, employment in applied psychology settings, professional coaching or other areas directly related to coaching.

Course Outcomes
This program is designed to provide graduates with the key theoretical understandings and the core skills necessary to work as a coach in a wide range of settings. Graduates of this course will be equipped to work in the scientist-practioner model, and can expect to find employment as human performance consultants and personal, workplace of executive coaches in industry, in the human resources field or in private practice.

Course Requirements
Candidates for the Graduate Certificate in Applied Science (Psychology of Coaching) are required to satisfactorily complete three core units of study PSYC 4721, PSYC 4722 and PSYC 4724, and 6 credit points from elective units of study. Candidates for the Graduate Diploma in Applied Science (Psychology of Coaching) are required to satisfactorily complete three core units of study PSYC 4721, PSYC 4722, and PSYC 4724, and 18 credit points from elective units. Candidates for the Master of Applied Science (Psychology of Coaching) are required to satisfactorily complete three core units of study PSYC 4721, PSYC 4722, and PSYC 4724, and 30 credit points from elective units.

Credit for previous study
See Graduate Certificate, Graduate Diploma and Master of Applied Science in this chapter or Course Resolutions in chapter 7.

Unit of study		Core/option
All units are worth 6 credit points		
Core units all degrees		
PSYC 4721	Theories & Techniques of Coaching Psych	C
PSYC 4722	Fundamentals of Coaching Practice	C
PSYC 4724	Coaching Practice: Co-coaching & Groups	**C**
Elective units Graduate Diploma		
PSYC 4723	Socio-cognitive Issues in Coaching Psych	0
PSYC 4725	Assessment and Selection	0
PSYC 4727	Coaching in Organisations	0
PSYC 4729	Groups, Teams and Systems	0
PSYC 4730	Personal and Work/Life Coaching	0

PSYC 4721 **Theories & Techniques of Coaching Psych**
6 credit points. Grad Cert App Sc (Psych Coaching), Grad Dip App Sc (Psych Coaching), Grad Dip Org Coaching, M Appl Sc (Psych Coaching). **Session:** Semester 1, Semester 2. **Classes:** 3 hrs/week. **Assessment:** Written papers (essay, journal or case study) and exam.
This unit outlines the emergence of Coaching from its roots in personal development, sports coaching, management consulting, clinical and counselling psychology, and details the fundamental models and techniques of coaching. Theories and techniques will be evaluated by reference to empirical research and conceptual analysis. Drawing on a broad base of established Behavioural Science, primary attention will be paid to cognitive-behavioural and solution-focused theories and techniques of behaviour change and their application to coaching clients. We will also evaluate key popular psychological approaches to coaching and personal development. Each weekly seminar has a lecture component and an experiential learning component. The experiential learning component requires students to evaluate each week's topic in relation to their own personal life experience and to participate in group discussion and coaching practice.

PSYC 4722 **Fundamentals of Coaching Practice**
6 credit points. Grad Cert App Sc (Psych Coaching), Grad Dip App Sc (Psych Coaching), Grad Dip Org Coaching, M Appl Sc (Psych Coaching). **Session:** Semester 1, Semester 2. **Classes:** 3 hrs/week. **Corequisites:** PSYC 4721.. **Assessment:** Written papers (essay, journal or case study) and exam.
This unit teaches the Fundamentals of coaching, and lays the foundations for sound contemporary practice. Drawing on established approaches (e.g. Egan, 1974; Whitemore, 1992) students will be trained in the core micro skills of coaching. The unit details key coaching strategies in relation to common applications of coaching; workplace coaching, executive coaching, and personal or life coaching. Core issues relating to mental health problems and coaching practice are addressed, and we explore the essentials of professional practice development/ marketing and Ethical (ICF) practice. Each seminar has a lecture component and an experiential learning component. The experiential learning component requires students to evaluate each topic in relation to their own personal life/work experience and to participate in group discussion. Practical experience of self-coaching and co-coaching are central aspects of this unit, students will apply self-coaching strategies to their own lives.

PSYC 4723 **Socio-cognitive Issues in Coaching Psych**
6 credit points. Grad Cert App Sc (Psych Coaching), Grad Dip App Sc (Psych Coaching), Grad Dip Org Coaching, M Appl Sc (Psych Coaching). **Session:** Semester 1. **Classes:** 2 hrs/week. **Prerequisites:** PSYC (4721 and 4722 and either 4724 or 4728). **Assessment:** Written papers (major and minor essay) and exam.
The aim of this unit is to give students an understanding of key socio-cognitive issues related to coaching and behaviour change The focus of the unit is on critical appraisal of theory and the relation of theory to practice and research. Topics covered in this unit include models of self-regulated behaviour, personality type, the relationships between emotion, cognition and behaviour, and the roles of learnt resourcefulness, learned optimism, psychological mindedness, self-reflection and insight in behaviour change. The unit also critically evaluates contemporary understandings and assessments of emotional intelligence. Current topics and research methods in coaching psychology are also examined. Each weekly seminar has a lecture component and an experiential learning component. The experiential learning component requires students to evaluate each week's topic in relation to their own personal life/work experience and to participate in group discussion.

PSYC 4724 **Coaching Practice: Co-Coaching & Groups**
6 credit points. Grad Cert App Sc (Psych Coaching), Grad Dip App Sc (Psych Coaching), Grad Dip Org Coaching, M Appl Sc (Psych Coaching). **Session:** Semester 1, Semester 2. **Classes:** 3 hrs/week. **Prerequisites:** PSYC (4721 and 4722). **Assessment:** Written papers (case study and learning journal) and exam.
Students will consolidate the theory and skills acquired in PSYC 4721 and PSYC 4722 through a semester-long coaching practicum. Using real-life issues in a supportive and confidential environment, students will coach each other in a structured solution-focused personal coaching program based on the material taught in previous units of study. This unit gives students experience in being both a coach and a client. A key component of this course will be feedback from the lecturer on students' coaching styles, skills and other relevant issues. As such this unit provides students with the opportunity to embed and develop their coaching skills. Case studies and case presentations will form part of the unit.

PSYC 4725 **Assessment and Selection**
6 credit points. Grad Cert H R M Coaching, Grad Dip App Sc (Psych Coaching), Grad Dip Org Coaching, M Appl Sc (Psych Coaching). **Session:** Semester 2. **Classes:** 2 hrs/week. **Prerequisites:** PSYC (4721 and 4722 and either 4724 or 4728). **Assessment:** Take home exam, Selection Case Study and Design of assessment program.
This unit will introduce students to some of the major assessment instruments used in coaching psychology. This unit does not accredit students to administer any of the instruments examined in this unit of study. Rather the unit focuses both on critical evaluation of assessment instruments and on fostering an understanding of where each may be best utilised. Assessment instruments include: NEO 4; 16PF5; Myers Briggs Type Inventory; the DISK; Human Synergistics; BarOn EQI; WAIS; MMPI; Self-directed Search; Strong Interest Inventory; Multi-factor Leadership Questionnaire.

PSYC 4727 **Coaching in Organisations**
6 credit points. Grad Cert H R M Coaching, Grad Dip App Sc (Psych Coaching), Grad Dip Org Coaching, M Appl Sc (Psych Coaching). **Session:** SI Late Int. **Prerequisites:** PSYC (4721 and 4722 and 4724).
Executive and management coaching have emerged as key factors in the enhancement of performance within organisations and corporations. This unit examines key issues in contemporary executive and management coaching and equips students with the knowledge and skills to provide world-class executive and management coaching. The emphasis is on critical evaluation of theory and application to practice. Although primarily focused on solution-focused and cognitive-behavioural approaches to executive coaching, psychodynamic (e.g. Kilburg) and systems (e.g. O'Neil) approaches are also considered. The course covers issues in senior executive coaching, coaching middle management, establishing manger-as-coach programs, mentoring in the workplace. This unit assumes knowledge of core coaching theories and techniques. It is strongly suggested that students enrol in this unit after completing PSYC 4721 and PSYC 4722.

PSYC 4729 **Groups, Teams and Systems**
6 credit points. Grad Cert H R M Coaching, Grad Dip App Sc (Psych Coaching), Grad Dip Org Coaching, M Appl Sc (Psych Coaching). **Session:** Semester 2. **Classes:** 3 hrs/week. **Prerequisites:** PSYC (4721 and 4722 and either 4724 or 4728). **Assessment:** Written papers (major essay, minor essay) and exam.
Coaching always takes place within the context of human systems, be they family, social networks, or workplace organisations. This unit of study considers both the theory and practice of working in human systems. At the theoretical level, students undertaking this unit will consider the major theoretical advances which aid our understanding of groups and complex human systems. These will include systems theory and complexity theory as well as major research findings in group and team dynamics. Students will also consider the practical implications of these theoretical approaches to coaching within organisations. Issues surrounding self organisation, leadership and control, and the management of change in complex adaptive systems will also be discussed. Students will design and facilitate a small group coaching program.

PSYC 4730 **Personal and Work/Life Coaching**
6 credit points. Grad Cert H R M Coaching, Grad Dip App Sc (Psych Coaching), Grad Dip Org Coaching, M Appl Sc (Psych Coaching). **Session:** Semester 1. **Classes:** 2 hrs/week. **Prerequisites:** PSYC (4721 and 4722 and either 4724 or 4728). **Assessment:** Written papers (Essays or case studies) and exam.
This unit of study considers both the theory and practice of coaching adults in relation to work/life issues. Self-directed career development and imposed career transitions are important issues increasingly faced by adults. In addition, work/life balance is recognised as being an important factor in creating and maintaining well-being. Thus personal (or life) coaches have a major role to play. This unit of study details the role of the personal coach, and gives students an introduction to major theoretical perspectives on work/life balance, and career development theory and practice. Students will study key psychological theories of adult development as they relate to personal (or life) coaching practice. The perspectives covered include Work Adjustment Theory, Trait and Type Theory, and Life Span Theory. The course will focus on coaching clients through important work/life transitions, with an emphasis on understanding individual differences in relation to gender, age and personality.

Spatial Information Science

Graduate Certificate in Applied Science (Spatial Information Science)

Course Overview
The Graduate Certificate in Applied Science (Spatial Information Science) provides an understanding of spatial analysis and modelling theory and use of GIS and Remote Sensing methods in a range of application fields. The opportunity to select optional units in com-

bination with the core GIS units will allow students to focus on a preferred specialisation within the broader spatial science spectrum. In providing a solid grounding in the principles of spatio-temporal analysis and spatial reasoning the core units will engender a depth of knowledge that is immediately transferable to industry. The optional units will extend this knowledge in specific applications areas and reinforce spatial science skills through practical and field-based training.

Course Outcomes
The program will enable students to adopt effective spatial analysis methods for addressing broader environmental and socio-economic issues, examine geographical trends, embrace advances in spatial information technologies and contribute to innovations in the spatial science industry.

Admission Requirements
Applicants for the Graduate Certificate in Applied Science (Spatial Information Science) should hold either a Bachelor's degree in Science (or equivalent) or have previous experience in the area that is considered to demonstrate the knowledge and aptitude to undertake this award course.

Course Requirements
To qualify for the award of Graduate Certificate in Applied Science (Spatial Information Science) candidates must complete 24 credit points of study including 12 credit points of core units of study (GEOG 5001 and GEOG 5002) and 12 credit points of optional units of study selected from GEOG 5003, GEOG 5004, ENVI 5809 and COMP 5338.

Credit for previous study
See Graduate Certificate, Graduate Diploma and Master of Applied Science in this chapter or Course Resolutions in chapter 7.

Unit of study		Core/Optional
Unless otherwise indicated, all units are worth 6 credit points.		
GEOG5001	Geographic Information Science A	C
GEOG5002	Geographic Information Science B	C
GEOG5003	Environmental Remote Sensing	0
GEOG5004	Environmental Mapping and Monitoring	0
COMP5338	Advanced Data Models	0
ENVI5809	Computer Modelling & Resource Management	0

COMP 5338 **Advanced Data Models**
6 credit points. B IT, B IT (Hons), B Psych (Hons), B Sc (Hons), Grad Cert Appl IT, Grad Cert IT. **Session:** Semester 1, Semester 2. **Classes:** 2 lee, 1 tut/wk. **Assumed Knowledge:** COMP5138 Relational Database Management Systems. **Prohibitions:** COMP5306. **Assessment:** Assignments, written exam.
This course will offer a comprehensive survey of post-relational data models and technologies with significant emphasis on XML and content management on the world wide web. The important challenges in managing the complex and varied data in modern database environments will be specifically addressed.
ENVI 5809 **Computer Modelling & Resource Management**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), M Envi Sci Law, M Sc, PG Coursework Exchange. Dr David Chapman. **Session:** Semester 1. **Classes:** Six workshops. **Assessment:** Report.
The concept and use of computer modelling in natural resource management is introduced in this unit of study, which is aimed particularly at non-programmers.
GEOG 5001 **Geographic Information Science A**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), M Sc, PG Coursework Exchange. Dr David Chapman. **Session:** Semester 1, Semester 2. **Classes:** Six workshops. **Assessment:** Report.
This unit of study gives an overview of basic spatial data models, and enables students to understand the import and export of data to and from a geographical information system (GIS). The manipulation of spatial data at a level appropriate to planning or locational applications, and the development of thematic maps from diverse data layers, will be addressed.

GEOG 5002 **Geographic Information Science B**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. Dr Eleanor Bruce. **Session:** Semester 2. **Classes:** 2 lee, 1 tut, 3 prac/w. **Assumed Knowledge:** to standard of GEOG 5001. **Assessment:** 2500 w assignment, seminar presentation, tutorial reports, WebCT quiz.
This course will provide the conceptual background to more advanced GIS analysis applications and spatial reasoning methods in the context of contemporary environmental issues. The course is designed to provide an understanding of spatial analysis techniques available within a GIS environment, explore a diversity of both social and physical environmental applications and address emerging issues in GIS research. A range of topics will be introduced including field based capture of spatial information, spatial data structures, surface modelling, visibility analysis, hydrological modeling, network analysis, spatial data uncertainty and social GIS.
Conceptual material presented in lectures and tutorial workshops will be placed in an applied context through a series of laboratory and field sessions designed to strengthen practical understanding and awareness of GIS methods.
GEOG 5003 **Environmental Remote Sensing**
6 credit points. Grad Cert App Sc (Enviro Sci), M Sc, PG Coursework Exchange. **Session:** Semester 1, Semester 2. **Classes:** 2 one hour lectures and a 4 hour practical per week. **Assumed Knowledge:** Knowledge or experience equivalent to GEOG5001 (Introduction to GIS). **Assessment:** Assignments, practicals and examination.
This unit of study provides a comprehensive introduction to the computational manipulation and application of imaging techniques commonly used in environmental management, from the microscopic to macroscopic level. It includes an introduction to the uses of aerial photography and initial training in image analysis using computer-based exercises. The application and interpretation of remote sensing techniques is then covered in computer-based practical exercises that use a mixture of Landsat thematic mapper, Hyper-spectral, airborne radiometric and magnetic databases. The application of processed images in environmental management will be covered through integrated lectures and laboratory exercise, with assignments being done as part of private study time.
GEOG 5004 **Environmental Mapping and Monitoring**
6 credit points. Grad Cert App Sc (Coastal Mgt), Grad Cert App Sc (Enviro Sci), PG Coursework Exchange. **Session:** Semester 2. **Prerequisites:** GEOG5001.

Wildlife Health and Population Management

Graduate Certificate in Applied Science (Wildlife Health and Population Management)
Graduate Diploma in Applied Science (Wildlife Health and Population Management)
Master of Applied Science (Wildlife Health and Population Management)

Course Overview
The Graduate Certificate in Applied Science (Wildlife Health and Population Management), Graduate Diploma in Applied Science (Wildlife Health and Population Management) and Master of Applied Science (Wildlife Health and Population Management) are articulated award courses that provide a professional qualification to biologists and veterinarians working in private practice, industry, research and education. The award program brings together the disciplines of animal health and wildlife population management, developing and enhancing skills in conservation techniques for native fauna, diagnosis and management of wildlife health, and management of native and pest species populations.

Course Outcomes
The aim of this articulated coursework program is to provide students with a coordinated and interdisciplinary approach to wildlife health and wildlife management, thus developing expertise to recognise and solve a broad range of problems in field populations. Upon completion of the Graduate Certificate, Graduate Diploma or Masters, graduates will have a broad understanding of the topic of wildlife management and practical skills developed from field studies. In addition, the Masters will provide experience in designing, carrying out and completing a research project and thesis.

Admission Requirements
Applicants for the Graduate Certificate in Applied Science (Wildlife Health and Population Management) should hold a first degree in science or veterinary science, or have the knowledge and aptitude obtained from professional or other experience required to undertake the award course.

Applicants for the Graduate Diploma in Applied Science (Wildlife Health and Population Management) similarly should hold a first

degree in science or veterinary science, or have the knowledge and aptitude obtained from professional or other experience required to undertake the award course, or have completed the Graduate Certificate in Applied Science (Wildlife Health and Population Management).

Applicants for the Master of Applied Science (Wildlife Health and Population Management) should hold a first degree in science or veterinary science, or have the knowledge and aptitude obtained from professional or other experience required to undertake the award course, or have completed the Graduate Diploma in Applied Science (Wildlife Health and Population Management).

Course Requirements
To qualify for award of the Graduate Certificate in Applied Science (Wildlife Health and Population Management), candidates must complete 24 credit points from the two six credit point core units and two of the six optional units of study, as described in the table below.

To qualify for award of the Graduate Diploma in Applied Science (Wildlife Health and Population Management), candidates must complete 36 credit points from the two six credit point core units and four of the six optional units of study, as described in the table below.

To qualify for award of the Master of Applied Science (Wildlife Health and Population Management), candidates must complete 48 credit points from all the core units and a selection of the optional units of study, as described in the table below.

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

Credit for previous study
See Graduate Certificate, Graduate Diploma and Master of Applied Science in this chapter or Course Resolutions in chapter 7.

Unit of study		Core/option
Unless otherwise indicated, all units are worth 6 credit points		
Core units all degrees		
WILD 5001	Australasian Wildlife: Introduction	C
WILD 5002	Australasian Wildlife: Field Studies	C
Additional core unit Masters		
WILD 5009	Research Project (12cp)	**C**
Optional units		
WILD 5003	Wildlife Health	0
WILD 5004	Vertebrate Pest Management	0
WILD 5005	In Situ Wildlife Management	0
WILD 5006	Ex Situ Wildlife Management	0
WILD 5007	Sustainable Wildlife Use & Stewardship	0

WILD 5001 **Australasian Wildlife: Introduction**
6 credit points. Grad Cert App Sc (Enviro Sci), Grad Cert App Sc (Wild Hlth & Pop Man), M Envi Sci Law, PG Coursework Exchange. Session: Semester 1.
NB: Core
This unit of study provides an introduction to the wildlife of Australasia, an overview of the present status of that wildlife, and an understanding of both conservation problems and management solutions. Issues in wildlife management are exemplified using a broad range of vertebrate species occupying different environments. Emphasis is placed on providing students with a coordinated and interdisciplinary approach to wildlife health and management, and on developing expertise in recognising and solving a broad range of problems in field populations. The unit integrates lectures, practical work and supervised study, and offers students the opportunity to work through real-world wildlife conservation problems relevant to their individual backgrounds.

WILD 5002 **Australasian Wildlife: Field Studies**
6 credit points. Grad Cert App Sc (Enviro Sci), Grad Cert App Sc (Wild Hlth & Pop Man), M Envi Sci Law, PG Coursework Exchange. Session: Semester 1.
NB: Core
This unit of study provides a first-hand introduction to the wildlife of Australasia, a practical overview of the present status of that wildlife, and an understanding of both conservation problems and management solutions. Issues in wildlife management are exemplified using sampling and diagnostic methods on a broad range of vertebrate species occupying different environments. The unit follows on from WILD 5001 and provides practical experience via a five day field trip.

WILD 5003 **Wildlife Health**
6 credit points. Grad Cert App Sc (Wild Hlth & Pop Man), PG Coursework Exchange. Session: Semester 1.
NB: Optional
This unit of study provides an introduction to the health issues confronting wildlife in Australasia, an overview of the health status of that wildlife, and an understanding of both the investigation of health problems and the effective management of these. Issues in wildlife disease management are exemplified using a broad range of vertebrate species occupying different environments. Emphasis is placed on providing students with a coordinated and interdisciplinary approach to wildlife health, and on developing expertise in recognising and solving a broad range of health problems in field populations. The unit integrates lectures, practical work and supervised study, and offer students the opportunity to work through real-world wildlife conservation problems relevant to their individual backgrounds.

WILD 5004 **Vertebrate Pest Management**
6 credit points. Grad Cert App Sc (Wild Hlth & Pop Man), PG Coursework Exchange. Session: Semester 2.
NB: Optional
Vertebrate pests occur in many parts of the world, and can pose significant problems for management of habitat, agricultural productivity, human and wildlife health. This unit focuses on vertebrates that have been introduced to new environments, and considers in detail the impacts and management of pest vertebrates in Australia. Steps in pest management are reviewed, from problem analysis to acceptable levels of control, using case studies of cane toads, rabbits, house mice and red foxes. Traditional mortality methods of management are reviewed, and emphasis placed on developing methods based on fertility control via immunocontraception.

WILD 5005 **In Situ Wildlife Management**
6 credit points. Grad Cert App Sc (Wild Hlth & Pop Man), PG Coursework Exchange. Session: Semester 1.
NB: Optional
Wildlife populations do not remain static, but change in size and composition over both time and space. The challenge for managers is to recognise when change in target populations exceeds acceptable limits and intervention is necessary. This unit of study develops skills in assessing population status and recognising differences between 'small populations' and 'declining populations'. It introduces methods used in population pattern analysis, demographic analysis, threat and resource assessment, and determination of health, emphasising the value of a coordinated and interdisciplinary approach to problem recognition and resolution.

WILD 5006 Ex **Situ Wildlife Management**
6 credit points. Grad Cert App Sc (Wild Hlth & Pop Man), PG Coursework Exchange. Session: Semester 2.
NB: Optional
Wildlife populations are under a variety of threats, most of which result from human activities. Modern conservation biology seeks practical solutions to these problems, using a wide variety of options. These options may include captive breeding and re-introduction programs, provided that a range of biological, ethical and politico-economic issues are addressed. This unit of study will provide students with the ability to evaluate the likely cost-effectiveness of such programs. It will also develop knowledge of the technologies available to capture and translocate wildlife, and of the planning required to ensure the best possible chance of success. The unit integrates lectures, tutorials, practical work and supervised study, and offers students the opportunity to examine real-world problems in the conservation and management of threatened wildlife populations using case studies relevant to their individual backgrounds.

WILD 5007 **Sustainable Wildlife Use and Stewardship**
6 credit points. Grad Cert App Sc (Enviro Sci), Grad Cert App Sc (Wild Hlth & Pop Man), PG Coursework Exchange. Session: Semester 2.
NB: Optional
The unit considers the potential for sustainable use of wildlife to contribute to the conservation of biodiversity and the economic well-being of local communities. There will be consideration of both consumptive and non-consumptive utilisation programs, using both Australian and international examples. Ethical and animal welfare issues will be considered in some detail.
A case study on the Australian kangaroo harvesting industry will provide an opportunity to examine all the factors that need to be taken into account - biological, socio-cultural, economic and animal welfare issues.
The unit is presented by Associate Professor Tony English from the Faculty of Veterinary Science.

WILD 5009 **Research Project**
12 credit points. M Appl Sc (Wild Hlth Pop Man). Session: Semester 1, Semester 2.
NB: Core for the Masters program
A valuable opportunity to apply some of the knowledge gained from earlier coursework, WILD 5009 comprises a research project on a topic with significant emphasis on wildlife health and/or population management, as arranged between the student and an appropriate supervisor. This research experience is highly valued by prospective employers as it shows a willingness and ability to undertake guided but independent research. The project is not conducted by way of contact hours per week for a semester. Instead the student is expected to work on the project full-time and in a continuous manner for the semester. This unit of study is available only to students enrolled in the Master of Applied Science (Wildlife Health and Population Management).

Wildlife Health and Population Management optional units of study

The following optional units are available. For detailed descriptions see the listings under the appropriate headings of postgraduate Degrees in Applied Science articulated coursework programs. Special attention should be paid to any pre-requisite studies that may be required.

- ENVI 5808 Applied Ecology for Environmental Scientists

Bioethics

Graduate Certificate in Bioethics (GradCertBEth)
Graduate Certificate in Bioethics (Biotechnology) (GradCertBEthBTech)
Graduate Diploma in Bioethics (GradDipBEth)
Master of Bioethics (MBEth)
Master of Bioethics (Honours) (MBEthHon)

Course Overview
The University of Sydney offers several postgraduate degree courses in Bioethics. Increasing levels of expertise are provided through completion of the Graduate Certificate in Bioethics, Graduate Certificate in Bioethics (Biotechnology), Graduate Diploma in Bioethics, Master of Bioethics, and the Master of Bioethics (Honours). These courses are designed to meet the widely recognised growing need for ethics education for scientists, researchers, and professionals working in medicine, nursing, public health, health law, health policy/administration, public policy, and science communication. They will also be attractive to students with general interests in relationships between science and society or relevant social science disciplines. Particular individual units of study (such as Core Concepts in Bioethics (BETH 5000), Human and Animal Research Ethics (BETH 5202), Ethics and Biotechnology (BETH 5201), and Ethics and Public Health (BETH 5203)) offered through the Postgraduate Program in Bioethics will be popular with postgraduate students pursuing degrees in other fields-such as medical humanities, law, biology, health sciences, biomedical sciences, public health, and/or any disciplines involving human or animal experimentation.

The discipline of bioethics is concerned with ethical questions arising in contexts of biological and medical science. Social concern about such issues has grown with advances in biomedical technology, as illustrated by contemporary debate over reproductive technologies, genetic engineering, cloning, and stem cell research. Traditional topics in bioethics include abortion, euthanasia, relationships between health care providers and patients, research involving humans and animals, and justice in the distribution of medical resources. Emerging topics include ethical issues related to global public health.

Falling at the intersections of ethics, policy, and biomedical science, bioethics is an inherently interdisciplinary field. The University of Sydney's Postgraduate Program in Bioethics uniquely addresses this interdisciplinarity head-on. In addition to the Core unit of study (BETH 5000), which provides a broad survey of the field of bioethics, our Foundational units provide interdisciplinary grounding in ethical philosophy (BETH 5101), philosophy of science/medicine (BETH 5102), sociology of medicine (BETH 5103), and bioethics law (BETH 5104). Specialisation in areas of particular interest is provided via Elective units with focus on biotechnology (BETH 5201), research ethics (BETH 5202), and public health (BETH 5203). All of these units of study include historical components. Qualified students admitted to the Master of Bioethics (Honours) degree will obtain further expertise in an area of special interest, and experience necessary for further postgraduate study (i.e. Ph.D), through completion of a research project (BETH 5301 and 5302).

The Master of Bioethics degree can be completed in one year by full-time students or over two years by part-time students. Further details on duration of study are provided below.

Course Outcomes
The University of Sydney Postgraduate Bioethics degree courses provide breadth and depth of coverage of both traditional and alternative/emerging issues in, and approaches to, bioethics. Our students will gain advanced understanding of the bearing of ethical philosophy, epistemology, law, sociology, linguistics, and history on issues of bioethics. They will develop interdisciplinary appreciation of relationships between values, science, and society. They will become familiar with both the historical and philosophical bases of local and international legislation and regulatory guidelines regarding the ethics of health care and research. They will develop, and be able to defend, their own reasoned judgments about how ethical issues arising in health care, research, and public policy contexts should be resolved; and they will be able to recognise novel, or previously unappreciated, ethical issues arising in the professional workplace or in social policy contexts. Our degrees contribute to the professional development of those working in health care-and they offer the skills and knowledge base necessary for critical analysis in health policy making or in relevant areas of social science disciplines. All of our degrees contribute to development of general skills in research, reading, writing, and oral expression. Expertise will vary with level of degree completed. The program has been designed to enable gradual progression from Graduate Certificate to Graduate Diploma, Masters, and Masters (Honours). The Graduate Certificate (Biotechnology) is specifically designed to provide ethical training for those working in the fields of, or those concerned with recent developments in, genetics and stem cell research. The Master of Bioethics (Honours) degree provides opportunity for in-depth learning in an area of special interest and research experience necessary for further postgraduate study.

Admission Requirements
Applicants for the Graduate Certificate, Graduate Certificate (Biotechnology), Graduate Diploma, and Master of Bioethics should hold an Honours or an equivalent four-year degree in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, law, or other relevant field. To apply to the Master of Bioethics (Honours)-i.e. the research Masters degree-students must first complete at least 4 units of study in, and have a distinction average or better in, the Bioethics program.

Course Requirements
Graduate Certificate in Bioethics
A total of four units of study (i.e. 24 credit points) must be completed;

Students must complete:

- the Core unit of study (BETH 5000),
- any two Foundational units of study
- one additional (Foundational or Elective) unit of study.

Students with appropriate background/experience may substitute (a maximum of two) other units of study for specifically required units upon approval of the course coordinator and Dean.

Students with special aims/interests may be permitted to substitute one relevant non-BETH postgraduate unit of study (in History, Medical Humanities, or Law, for example) for specifically required units upon approval of the course coordinator and Dean.

Regardless of the reason, in no case shall more than two unit of study substitutions be permitted.

Students may not take BETH 5301 or BETH 5302.

This degree will usually be completed by full-time students during semester one or by part-time students over two or three semesters.

Graduate Certificate in Bioethics (Biotechnology)
A total of four units of study (i.e. 24 credit points) must be completed;

Students must complete:

- the Core unit of study (BETH 5000),
- one Foundational unit of study,
-BETH 5201, and
- BETH 5202.

Students with appropriate background/experience may substitute (a maximum of two) other units of study for specifically required units upon approval of the course coordinator and Dean.

Students with special aims/interests may be permitted to substitute one relevant non-BETH postgraduate unit of study (in History, Medical Humanities, or Law, for example) for specifically required units upon approval of the course coordinator and Dean.

Regardless of the reason, in no case shall more than two unit of study substitutions be permitted.

Students may not take BETH 5301 or BETH 5302.

This degree will usually be completed part-time over two to three semesters.

Graduate Diploma in Bioethics

A total of six units of study (i.e. 36 credit points) must be completed;

Students must complete:

- the Core unit of study (BETH 5000),
- any three Foundational units, and
- two additional (Foundational or Elective) units.

Students with appropriate background/experience may substitute (a maximum of two) other units of study for specifically required units upon approval of the course coordinator and Dean.

Students with special aims/interests may be permitted to substitute one relevant non-BETH postgraduate unit of study (in History, Medical Humanities, or Law, for example) for specifically required units upon approval of the course coordinator and Dean.

Regardless of the reason, in no case shall more than two unit of study substitutions be permitted.

Students may not take BETH 5301 or BETH 5302.

This degree will usually be completed full-time over two semesters, or part-time over three to four semesters.

Master of Bioethics
A total of eight units of study (i.e. 48 credit points) must be completed;

Students must complete:

- the Core unit of study (BETH 5000),
- four Foundational units of study, and
- three Elective units of study.

Students with appropriate background/experience may substitute (a maximum of two) other units of study for specifically required units upon approval of the course coordinator and Dean.

Students with special aims/interests may be permitted to substitute one relevant non-BETH postgraduate unit of study (in History, Medical Humanities, or Law, for example) for specifically required units upon approval of the course coordinator and Dean.

Regardless of the reason, in no case shall more than two unit of study substitutions be permitted.

Students may not take BETH 5301 or BETH 5302.

This degree will usually be completed full-time over two semesters, or part-time over three to four semesters.

Master of Bioethics (Honours)
A total often units of study (i.e. 60 credit points) must be completed;

Students must complete:

- all requirements for the Master of Bioethics (i.e. as specified above), and
- the Research Project (i.e. BETH 5301 and BETH 5302).

Students with appropriate background/experience may substitute (a maximum of two) other units of study for specifically required units upon approval of the course coordinator and Dean.

Students with special aims/interests may be permitted to substitute one relevant non-BETH postgraduate unit of study (in History, Medical Humanities, or Law, for example) for specifically required units upon approval of the course coordinator and Dean.

Regardless of the reason, in no case shall more than two unit of study substitutions be permitted.

Before applying for this track, students must first complete at least four units of study in the Bioethics program (i.e. usually while enrolled in one of the degrees listed above).

Students must have at least a Distinction (D) average in Bioethics program units in order to be admitted to this track.

Possibility of pursuing research projects will depend upon the availability of appropriate supervisors.

This degree will usually be completed full-time over three semesters, or part-time over four to six semesters.

Credit for Previous Study
Credit is available in the Graduate Certificate in Bioethics, Graduate Certificate in Bioethics (Biotechnology), Graduate Diploma in Bioethics, Master of Bioethics, and Master of Bioethics (Honours) for postgraduate units of study which have been taken through the University of Sydney Postgraduate Program in Bioethics within the previous three years and for which no award has been conferred. Credit may be obtained for Bioethics units of study offered through the University's Professional Master of Medicine Program so long

as these same units are not counted towards another degree (being) conferred to the student.

Course Resolutions: see chapter 7

Core units of study

BETH 5000 **Core Concepts in Bioethics**
6 credit points. Grad Cert Bioethics, Grad Cert Bioethics(Biotech), Grad Dip Bioethics, M Bioethics, M Bioethics (Hons), PG Coursework Exchange. **Session:** Semester lb. **Classes:** Two hours of seminars/wk and up to 4 hrs/wk in small group session, project work, and consultation with lecturers. **Assumed Knowledge:** Honours or equivalent in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field-or by special permission. A limited number of students may be granted permission to take this unit during their honours year. **Assessment:** Two 4,500 word essays; research project/presentation.
This unit of study provides a broad overview of the primary issues in, and theoretical approaches to, bioethics. Following an introduction to the history of bioethics and review of the major theoretical approaches to applied ethics, central debates in bioethics-surrounding doctor-patient relationships, informed consent, privacy/confidentiality, research ethics, abortion, euthanasia, genetics, cloning, stem cell research, justice and distribution of health care resources, etc.-are examined. In addition to classical cases and traditional theoretical perspectives, emerging topics and alternative perspectives are explored. The unit concludes with the topic of global public health and socio-political critique(s) of the discipline of bioethics itself. Learning activities will include 2-hour seminars, small group sessions, and project work. It is recommended, but not required, that BETH 5000 is taken during students' first semester in the program.

Foundational units of study

BETH 5101 **Introduction to Ethical Reasoning**
6 credit points. Grad Cert Bioethics, Grad Cert Bioethics(Biotech), Grad Dip Bioethics, M Bioethics, M Bioethics (Hons), PG Coursework Exchange. **Session:** Semester 1. **Classes:** Two hours of seminar/week and up to 4 hours per week spent on small group sessions, project work, and consultation with lecturers. **Assumed Knowledge:** Honours or equivalent in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field-or by special permission. **Assessment:** Three 4,500 word essays.
This unit prepares students for advanced analysis of issues in bioethics by laying foundations in both critical thinking and ethical theory. Following an introduction to the construction and assessment of arguments, central issues of debate in meta ethics, normative ethics, and political philosophy are examined. Major traditional (historical, consequential, deontological, contractarian/egalitarian, and communitarian) theoretical frameworks as well as postmodern/continental perspectives are introduced and critically evaluated. The unit concludes with an introduction to applied and professional ethics. Learning activities will include 2-hour seminars, small group sessions, and project work. It is recommended, but not required, that BETH 5101 is taken during students' first semester in the program.

BETH 5102 **Philosophy of Medicine**
6 credit points. Grad Cert Bioethics, Grad Cert Bioethics(Biotech), Grad Dip Bioethics, M Bioethics, M Bioethics (Hons), PG Coursework Exchange. **Session:** Semester 1. **Classes:** One 2-hour seminar/week with up to 4 hours/week spent on small group sessions, project work, and consultation with lecturers. **Assumed Knowledge:** Honours or equivalent four year degree in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field-or by special permission. **Assessment:** Two 2000-word essays, one research project/presentation.
NB: A limited number of students may be granted permission to take this unit during their honours year.
This unit of study introduces students to the broader philosophical issues and epistemological structures that underlie medicine and the biomedical sciences. The unit will begin by introducing students to the philosophy of science and medicine, epistemology and the concepts of health, illness and disease. The second part of the unit will review debates regarding disease causation and the social construction of disease. Students will then consider issues relating to the generation and use of knowledge and evidence, and the differences between conventional and alternative/non-Western approaches to illness and healing. The final part of the unit will focus on diagnosis, nosology and classification of disease, with particular reference to mental illness. Learning activities will include 2-hour weekly seminars, small group sessions and project work. Assessment tasks will consist of two essays and a research project/presentation.

BETH 5103 **Biomedicine and Society**
6 credit points. Grad Cert Bioethics, Grad Cert Bioethics(Biotech), Grad Dip Bioethics, M Bioethics, M Bioethics (Hons), PG Coursework Exchange. **Session:** Semester 2. **Classes:** One 2-hour seminar/ week with up to 4 hours/week spent on small group sessions, project work and consultation with lecturers. **Assumed Knowledge:** Honours or equivalent in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field-or by special permission. **Assessment:** One 3000 word essay, presentation/ project, reflective exercise.
NB: A limited number of students may be granted permission to take this unit during their honours year.
This unit introduces students to the complex relationships between biomedicine and society utilizing several disciplines including philosophy, ethics, sociology, anthropology and linguistics. Students will consider issues such as power in the biomedical professions and industries; the illness experience; the role of the healer; biomedicine and indigenous cultures and non-western notions of illness and care. Learning activities will include 2-hour weekly seminars and readings. Assessment tasks will consist of an essay, a presentation/project and a personal reflection exercise.

BETH 5104 **Bioethics, Law and Society**
6 credit points. Grad Cert Bioethics, Grad Cert Bioethics(Biotech), Grad Dip Bioethics, M Bioethics, M Bioethics (Hons), PG Coursework Exchange. **Session:** Semester 1. **Classes:** One 2-hour seminar/week with up to four hours per week using WebCT and consultation with lecturers. **Assumed Knowledge:** Honours or equivalent four year degree in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field-or by special permission. **Assessment:** Two 3000 word essays.
The unit of study will begin by introducing students to interrelationships between health care, ethics, and the law. In particular students will explore the moral basis of law and the means by which law influences moral norms, clinical practice, and health policy. Students will be shown how to critically read and analyse primary sources of law relevant to bioethics. Students will then examine a number of areas of law that have particular significance for bioethics and society including the law of tort (consent and standards of care), contract (confidentiality), criminal law (euthanasia and abortion), public health law, administrative law and law reform.

BETH 5201 **Ethics and Biotech: Genes and Stem Cells**
6 credit points. Grad Cert Bioethics, Grad Cert Bioethics(Biotech), Grad Dip Bioethics, M Bioethics, M Bioethics (Hons), PG Coursework Exchange. **Session:** Semester 2. **Classes:** The equivalent of one 2-hour seminar/ week will be presented in an intensive format during weeks 8-9. In addition, students will spend up to four hours per week on small group sessions, project work and consultation with lecturers over the course of the 13 weeks of semester. **Assumed Knowledge:** Honours or equivalent in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field-or by special permission. **Assessment:** Two 2000-word essays, one project/presentation.
NB: A limited number of students may be granted permission to take this unit during their honours year.
This unit introduces students to the broader social/political, ethical/philosophical and legal/regulatory issues that underlie genetics, stem cell research and the emerging biotechnologies. The unit will provide a brief overview of the relevant science before considering scientific, cultural and religious understandings of life and human identity. The second part of the unit will review the political, regulatory and commercial context of biotechnology and the control of information. Students will then review the history of genetics and eugenics and the ethical issues that arise in clinical and population genetics, stem cell research and cloning. The final part of the unit will explore the boundaries of research and knowledge and the issues raised by emerging biotechnologies, such as nanotechnology and proteomics. Learning activities will include an intensive seminar program, small group sessions, and reading. Students will be able to concentrate on stem cell research, clinical or molecular genetics or other biotechnologies according to their clinical and scientific interests and experience. Assessment tasks will consist of two essays and a presentation/project.

BETH 5202 **Human and Animal Research Ethics**
6 credit points. Grad Cert Bioethics, Grad Cert Bioethics(Biotech), Grad Dip Bioethics, M Bioethics, M Bioethics (Hons), PG Coursework Exchange. **Session:** Semester 2. **Classes:** One 2-hour seminar/ week with up to 4 hours/week spent on small group sessions, project work and consultation with lecturers. **Assumed Knowledge:** Honours or equivalent in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field-or by special permission. **Assessment:** Two 2000-word essays, one mock research ethics application.
This unit introduces students to research ethics in its social context. Students will first analyse the philosophical underpinnings of the research endeavour, including the justifications for engaging in research, research priorities and research integrity. The unit will then review the history of research and research abuses, the evolution of research ethics and the regulation of research in Australia. The second part of the unit will focus on issues arising in the conduct of research including; the protection of research subjects (both human and animal), consent, confidentiality and risk/benefit analysis. Learning activities will include 2-hour weekly seminars and readings. Assessment tasks will consist of essays and a mock research ethics application.

BETH 5203 **Ethics and Public Health**

6 credit points. Grad Cert Bioethics, Grad Cert Bioethics(Biotech), Grad Dip Bioethics, M Bioethics, M Bioethics (Hons), PG Coursework Exchange. **Session:** Semester 2. **Classes:** One 2-hour seminar/ week with up to 4 hours/week spent on small group sessions, project work and consultation with lecturers. **Assumed Knowledge:** Honours or equivalent in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, or other relevant field-or by special permission. **Assessment:** Two 2000-word essays, one project/presentation.

This unit will provide students with an overview of the broader philosophical, ethical, sociopolitical and cultural issues that underlie public health and public health research. Students will first review the history of public health and examine the values that underpin health promotion and disease prevention. The second part of the unit will critique the place of facts and values in public health and the construction and use of information, with particular reference to evidence-based-medicine. The third part of the unit will examine the cultural, moral and social context of public health including the social determinants of health, the construction of health services, the determination of research priorities and issues relating to human rights and global health. Learning activities will include 2-hour weekly seminars and readings. Assessment tasks will consist of essays and a presentation/project.

BETH 5301 **Research Project** A

6 credit points. M Bioethics (Hons). **Session:** Semester 1, Semester 2. **Classes:** Weekly consultation with supervisor(s). **Prerequisites:** Distinction average (or higher) in 24 credit points of BETH units of study. **Assessment:** Research tasks, 15,000 word thesis (in conjunction with BETH 5302).

NB: Only available to students admitted to the Master of Bioethics (Honours) degree. BETH5301 must be taken in conjunction with BETH5302. It is recommended, but not required, that BETH 5301 and BETH 5302 are taken in separate semesters.

This unit must be taken in conjunction with BETH 5302 (Research Project B). These units are only available to students admitted to the Master of Bioethics (Honours) degree track. The Research Project (i.e. parts A and B combined) provides opportunity for research and in-depth learning in a bioethics topic of special interest or importance to the student. Successful completion of the project may also provide students with the research experience required for the pursuit of a higher degree. This unit involves independent research and regular meetings with (a) supervisor(s). In the process of completing the Research Project (i.e. parts A and B combined), students will produce an original 15,000 word thesis. Choice of thesis topic depends on availability of appropriate supervisor(s). It is recommended, but not required, that BETH 5301 and 5302 are taken in separate semesters. A mark for both BETH 5301 and BETH 5302 combined is provided at the completion of BETH 5302 (upon submission of thesis). It is possible to take these units in distance mode.

BETH 5302 **Research Project B**

6 credit points. M Bioethics (Hons). **Session:** Semester 1, Semester 2. **Classes:** Weekly consultation with supervisor(s). **Prerequisites:** Distinction average (or higher) in 24 credit points of BETH units of study. **Assessment:** Research tasks, 15,000 word thesis (in conjunction with BETH 5301).

NB: Only available to students admitted to the Masters of Bioethics (Honours) degree. Must be taken in conjunction with BETH 5301. It is recommended, but not required that BETH 5301 and BETH 5302 are taken in separate semesters.

This unit must be taken in conjunction with BETH 5301 (Research Project A). These units are only available to students admitted to the Master of Bioethics (Honours) course of study. The Research Project (i.e. parts A and B combined) provides opportunity for research and in-depth learning in a bioethics topic of special interest or importance to the student. Successful completion of the project may also provide students with the research experience required for the pursuit of a higher degree. This unit involves independent research and regular meetings with (a) supervisor(s). In the process of completing the Research Project (i.e. parts A and B combined), students will produce an original 15,000 word thesis. Choice of thesis topic depends on availability of appropriate supervisor(s). It is recommended, but not required, that BETH 5301 and 5302 are taken in separate semesters. A mark for both BETH 5301 and BETH 5302 combined is provided at the completion of BETH 5302 (upon submission of thesis). It is possible to take these units at a distance.

7. Postgraduate degree regulations

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

The postgraduate degrees in the Faculty of Science are:

Degrees of Doctor
DSc - Doctor of Science
PhD - Doctor of Philosophy
DCP/MSc - Doctor of Clinical Psychology/Master of Science
DCN/MSc - Doctor of Clinical Neuropsychology/Master of Science (not available to new students in 2006)

Degrees of Master
MSc - Master of Science
MSc(EnvironSc) - Master of Science (Environmental Science)
MSc(Micr&An) - Master of Science (Microscopy and Microanalysis)
MlnfTech - Master of Information Technology
MInfTechMan - Master of Information Technology Management
MApplIT - Master of Applied Information Technology (not available to new students in 2006)
MMedPhys - Master of Medical Physics
MNutrDiet - Master of Nutrition and Dietetics
MNutrSc - Master of Nutritional Science
MEnviSciLaw - Master of Environmental Science and Law
MApplSc - Master of Applied Science
MBEth - Master of Bioethics
MBEthHon - Master of Bioethics (Honours)
MApplSc(Bioinf) - Master of Applied Science (Bioinformatics)
MApplSc(Coastal Mgt) - Master of Applied Science (Coastal Management)
MApplSc(EnvSc) - Master of Applied Science (Environmental Science)
MApplSc(Microsc & Microanal) - Master of Applied Science (Microscopy and Microanalysis)
MApplSc(MBT) - Master of Applied Science (Molecular Biotechnology)
MApplSc(NeuroSc) - Master of Applied Science (Neuroscience) (not available to new students in 2006)
MApplSc(Nutr & Diet) - Master of Applied Science (Nutrition and Dietetics) (not available to new students in 2006)
MApplSc(PsycCoach) - Master of Applied Science (Psychology of Coaching)
MApplSc(WildHlthPopMan) - Master of Applied Science (Wildlife Health and Population Management)

Diplomas
GradDipSc - Graduate Diploma in Science
GradDipSc(Psych) - Graduate Diploma in Science (Psychology)
GradDipInfTech - Graduate Diploma in Information Technology
GradDiptlTMan - Graduate Diploma in Information Technology Management
GradDipApplIT - Graduate Diploma in Applied Information Technology (not available to new students in 2006)
GradDipComputing - Graduate Diploma in Computing
GradDipMedPhys - Graduate Diploma in Medical Physics
GradDipPsych - Graduate Diploma in Psychology
GradDipApplSc - Graduate Diploma in Applied Science
GradDipBEth - Graduate Diploma in Bioethics
GradDipApplSc(Bioinf) - Graduate Diploma in Applied Science (Bioinformatics)
GradDipApplSc(Coastal Mgt) - Graduate Diploma in Applied Science (Coastal Management)
GradDipApplSc(EnvSc) - Graduate Diploma in Applied Science (Environmental Science)
GradDipApplSc(Microsc & Microanal) - Graduate Diploma in Applied Science (Microscopy and Microanalysis)
GradDipApplSc(MBT) - Graduate Diploma in Applied Science (Molecular Biotechnology)
GradDipApplSc(NeuroSc) - Graduate Diploma in Applied Science (Neuroscience) (not available to new students in 2006)
GradDipApplSc(PsycCoach) - Graduate Diploma in Applied Science (Psychology of Coaching)
GradDipApplSc(WildHlthPopMan) - Graduate Diploma in Applied Science (Wildlife Health and Population Management)

Certificates
GradCertSc(HPS) - Graduate Certificate in Science (History and Philosophy of Science)
GradCertSc(Micr&An) - Graduate Certificate in Science (Microscopy and Microanalysis)
GradCertlnfTech - Graduate Certificate in Information Technology
GradCertlTMan - Graduate Certificate in Information Technology Management
GradCertApplIT - Graduate Certificate in Applied Information Technology (not available to new students in 2006)
GradCertApplSc - Graduate Certificate in Applied Science
GradCertBEth - Graduate Certificate in Bioethics
GradCertBEthBTech - Graduate Certificate in Bioethics (Biotechnology)
GradCertApplSc(Bioinf) - Graduate Certificate in Applied Science (Bioinformatics)
GradCertApplSc(Coastal Mgt) - Graduate Certificate in Applied Science (Coastal Management)
GradCertApplSc(EnvSc) - Graduate Certificate in Applied Science (Environmental Science)
GradCertApplSc(Microsc & Microanal) - Graduate Certificate in Applied Science (Microscopy and Microanalysis)
GradCertApplSc(MBT) - Graduate Certificate in Applied Science (Molecular Biotechnology)
GradCertApplSc(NeuroSc) - Graduate Certificate in Applied Science (Neuroscience) (not available to new students in 2006)
GradCertApplSc(Nutr & Diet) - Graduate Certificate in Applied Science (Nutrition and Dietetics) (not available to new students in 2006)
GradCertApplSc(PsychCoach) - Graduate Certificate in Applied Science (Psychology of Coaching)
GradCertApplSc(SIS) - Graduate Certificate in Applied Science (Spatial Information Science)
GradCertApplSc(WildHlthPopMan) - Graduate Certificate in Applied Science (Wildlife Health and Population Management)

Prospective candidates for these awards should consult with the appropriate postgraduate adviser (see chapter 2) or Head of the Department most closely concerned, as early as possible.

Candidates who have commenced qualifications in the past that are no longer offered by the Faculty should make reference to the regulations applicable in their first year of enrolment and consult with the advisors in the Faculty office.

University of Sydney (Coursework) Rule 2000 (as amended)

See the University of Sydney (Coursework) Rule 2000 (as amended) (chapter 10).

Degrees of Doctor

Doctor of Science (DSc)

Resolutions of the Senate

The Resolutions of the Senate relating to the degree of Doctor of Science are printed in the University of Sydney Calendar, the following Resolutions of the Faculty also apply.

Resolutions of the Faculty

(i) Published work which a candidate for the degree of Doctor of Science submits for examination must, in addition to satisfying the requirements of the resolutions of the Senate relating to the degree, be in a field with which the Faculty is concerned.

(ii) A candidate for the degree is required, by way of an introduction, to describe the theme of the published work submitted and, where there is a large number of publications whose dates range over a period of time and which contain some range of subject matter, to state how these are related to one another and to the theme.

(hi) If a prospective candidate, as a first step, tenders the introduction called for in (ii) above, together with a list of the published work which it is proposed to submit for examination, the Faculty will endeavour to make an assessment as to whether the published work is in a field with which the Faculty is concerned and, if so, an assessment also of the prima facie worthiness for examination of the published work.

(iv) A prospective candidate who tenders the introduction together with the list of published work shall not be debarred from subsequently submitting the published work for examination.

Doctor of Philosophy (PhD)

Resolutions of the Senate

The Resolutions of the Senate and Academic Board relating to the degree of Doctor of Philosophy are printed in the University of Sydney Calendar.

Doctor of Clinical Psychology/Master of Science (DCP/MSc)

Resolutions of the Senate

Award of the degrees

1. The degrees of Doctor of Clinical Psychology and Master of Science shall only be awarded on satisfactory completion of the requirements for both degrees, except as provided by the Resolutions of the Senate relating to the degree of Master of Science.

Eligibility for admission

2. The Dean of the Faculty of Science may admit to candidature:

(1)

(a) graduates of the University of Sydney holding the degree of Bachelor of Psychology, Bachelor of Science (Honours), Bachelor of Arts (Honours), Bachelor of Economics (Social Sciences) (Honours), or Bachelor of Liberal Studies (Honours) in Psychology with a result of 2:1 or better or any other equivalent award of the University of Sydney; or

(b) graduates of other universities who have qualifications equivalent to those specified in subsection (1); and

(2) who have satisfied the Department of their personal suitability for the practice of clinical psychology determined by personal interview and by analysis of units of study completed.

Availability

3.

(1) Admission to candidature may be limited by a quota. In determining the quota, the University will take into account:

(a) availability of resources including space, laboratory and computing facilities; and

(b) availability of adequate and appropriate supervision.

(2) In considering an application for admission to candidature, the Head of Department, the Director of Clinical Training and the Dean shall take account of the quota and shall select, in preference, applicants who are most meritorious in terms of section 2 above.

Method of progression

4. A candidate for the combined award course shall proceed by completing units of study, clinical internships, research and thesis in accordance with Sections 7 and 8.

Time limits

5.

(1) A candidate may proceed on either a full-time or a part-time basis.

(2) A candidate shall complete the requirements for the combined award course in a minimum of six semesters and a maximum of twelve semesters, and except with permission of the Dean within nine calendar years of admission to candidature.

(3) The Dean of the Faculty of Science in consultation with the Director of Clinical Training shall approve any period of absence.

Requirements for the combined award course

6. Candidates for the combined award course are required to:

(1) complete satisfactorily all units of study listed in Table 7.1. A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed. In these resolutions, "to complete a unit of study" or any derivative expression means:

(a) to attend all the lectures and the meetings, if any, for seminars or tutorial instruction;

(b) to complete satisfactorily the essays, exercises, practical and project work if any; and

(c) to pass any other examination of the unit of study that may apply;

(2) pursue a course of advanced study and research leading to the submission of a thesis in an area of clinical research;

(3) complete satisfactorily clinical internships in accordance with Sections 7 and 8.

7. The following are the requirements for the combined award course. The structure of the course is arranged to cover areas from five key topics, namely: Therapy Knowledge and Skills, Assessment Knowledge and Skills, Clinical Internships, Ethics and Professional Practice and Research arranged as shown in Table 7.1: DCP/MSc requirements.

Table 7.1: DCP/MSc requirements

Year	Sem.	Therapy Knowledge and Skills	Assessment Knowledge and Skills	Clinical Internships	Case Seminars	Research
1	1	PSYC6051AdultPsychological Disorders	PSYC6002Psychological Assessment of Adults	PSYC6003 Clinical Internship 1	PSYC6004 Ethics and Professional Practice PSYC6029 Case Seminars 1	PSYC6005 Research 1
	2	PSYC6049 Child Psychological Disorders PSYC6053 Developmental Disorders	PS YC6007 Psychological Assessment of Children	PS YC6008 Clinical Internship 2	PSYC6009 Case Seminars 2	PSYC6010 Research 2
2	1	PSYC6055 Advanced Adult Psychological Disorders PSYC6032 Adult Health Psychology	PSYC6054 Adult Neuropsychopathology	PSYC6013 Clinical Internship 3	PSYC6014 Case Seminars 3	PSYC6015 Research 3
	2	PSYC6056 Advanced Seminars	PSYC6031 Family Therapy	PSYC6018 Clinical Internship 4	PSYC6062 Case Seminars 4	
3	1	Nil	Nil	PSYC6061 Clinical Internship and Case Seminars 5		
	2	Nil	Nil	PSYC6058 Clinical Internship and Case Seminars 6		

Examination

8. The procedures for the examination and award of the Master of Science shall be prescribed in the Resolutions of the Senate relating to that degree.

9. On completion of the requirements for the combined award course, the Faculty, on the recommendation of the Head of Department and the Director of Clinical Training, shall determine the results of the candidature.

Progress

10.

(1) The Dean may:

(a) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards the completion of the combined award course; and

(b) terminate the candidature where the candidate does not show good cause.

(2) Satisfactory progress is prescribed as:

(a) a candidate for the combined award course must complete satisfactorily (at a pass level) all units of study;

(b) if a candidate fails to complete satisfactorily a unit of study at the first attempt, they can make a second attempt at completing that unit of study. They may not begin the next unit of study within the same key topic area until the previous unit of study has been satisfactorily completed;

(c) any candidate who fails to complete satisfactorily a unit of study at the second attempt will normally be deemed to have failed to complete the course requirements and their candidature will be terminated by the Dean; and

(d) if a candidate fails to complete satisfactorily two units of study within the same key topic area at the first attempt, they will normally be deemed to have failed to complete the course requirements and their candidature will be terminated by the Dean.

Credit

11. A candidate who, before admission to candidature, has spent time in graduate study and, within the previous three years, has completed coursework considered by the Dean to be equivalent to units of study prescribed for the combined award course, may receive credit of up to 48 credit points towards the requirements for the Doctor of Clinical Psychology provided that the completed work was not counted toward the requirements of another degree.

Transfer to and from Doctor of Philosophy Candidature

12.

(1) The Director of Clinical Training in consultation with the Head of Department may recommend to the Dean of the Faculty of Science that a candidate withdraw from candidature for the combined award course and complete requirements for the degree of Doctor of Philosophy under such conditions as the University may determine.

(2) The Dean of the Faculty may readmit to candidature a candidate who has previously withdrawn from the combined award course as provided for in section (1) above and who has completed the requirements for the award of the degree of Doctor of Philosophy. Such a candidate shall complete the requirements for the degree of Doctor of Clinical Psychology under such conditions as the Dean may determine but shall not be permitted to continue candidature for the award of the degree of Master of Science.

(3) The Dean of the Faculty may readmit to candidature a candidate who has previously withdrawn from the combined award course as provided for in section (1) above and who has not completed the requirements for the award of the degree of Doctor of Philosophy. Such a candidate will complete the requirements for the combined award course under such conditions as the Dean may determine.

(4) Except in exceptional circumstances, and with the permission of the Dean, readmission to candidature under subsections 2 and 3 above shall occur within fourteen semesters of withdrawal under subsection 1 above and within a maximum of nine years from commencement of candidature for the DCP/MSc course.

Doctor of Clinical Neuropsychology/Master of Science (DCN/MSc)

This award course is not available to new students in 2006

Resolutions of the Senate

Award of the degrees

1. The degrees of Doctor of Clinical Neuropsychology and Master of Science shall only be awarded on satisfactory completion of the requirements for both degrees, except as provided by the Resolutions of the Academic Board relating to the degree of Master of Science.

Eligibility for admission

2. The Dean of the Faculty of Science may admit to candidature:

(1)

(a) graduates of the University of Sydney holding the degree of Bachelor of Psychology, Bachelor of Science (Honours), Bachelor of Arts (Honours), Bachelor of Economics (Social Sciences) (Honours), or Bachelor of Liberal Studies (Honours) in Psychology with a result of 2:1 or better or any other equivalent award of the University of Sydney; or

(b) graduates of other universities who have qualifications equivalent to those specified in subsection (1); and

(2) who have satisfied the Department of their personal suitability for the practice of clinical psychology determined by personal interview and by analysis of units of study completed.

Availability

3.
(1) Admission to candidature may be limited by a quota. In determining the quota, the University will take into account:
(a) availability of resources including space, laboratory and computing facilities; and
(b) availability of adequate and appropriate supervision.
(2) In considering an application for admission to candidature, the Head of Department, the Director of Clinical Training and the Dean shall take account of the quota and shall select, in preference, applicants who are most meritorious in terms of section 2 above.

Method of progression

4. A candidate for the combined award course shall proceed by completing units of study, clinical internships, research and thesis in accordance with Sections 7 and 8.

Time limits

5.
(1) A candidate may proceed on either a full-time or a part-time basis.
(2) A candidate shall complete the requirements for the combined award course in a minimum of six semesters and a maximum of nine semesters, and except with permission of the Dean within nine calendar years of admission to candidature.
(3) The Dean of the Faculty of Science in consultation with the Director of Clinical Training shall approve any period of absence.

Requirements for the combined award course

6. Candidates for the combined award course are required to:
(1) complete satisfactorily all units of study listed in Table 7.2. A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed. In these resolutions, "to complete a unit of study" or any derivative expression means:
(a) to attend all the lectures and the meetings, if any, for seminars or tutorial instruction;
(b) to complete satisfactorily the essays, exercises, practical and project work if any; and
(c) to pass any other examination of the unit of study that may apply.
(2) pursue a course of advanced study and research leading to the submission of a thesis in an area of clinical Neuropsychology research;
(3) complete satisfactorily clinical internships in accordance with Sections 7 and 8.

7. The following are the requirements for the combined award course. The structure of the course is arranged to cover areas from five key topics, namely: Assessment Knowledge and Skills, Therapy Knowledge and Skills, Clinical Internships, Ethics and Professional Practice and Research arranged as shown in Table 7.2: DCN/MSc requirements.

Examination

8. The procedures for the examination and award of the Master of Science shall be prescribed in the Resolutions of the Academic Board and Senate relating to that degree.

9. On completion of the requirements for the combined award course, the Faculty, on the recommendation of the Head of Department and the Director of Clinical Training, shall determine the results of the candidature.

Progress

10.
(1) The Dean may:
(a) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards the completion of the combined award course; and
(b) where the candidate does not show good cause, terminate the candidature.
(2) Satisfactory progress is prescribed as:
(a) a candidate for the combined award course must complete satisfactorily (at a pass level) all units of study;
(b) if a candidate fails to complete satisfactorily a unit of study at the first attempt, they can make a second attempt at completing that unit of study. They may not begin the next unit of study within the same key topic area until the previous unit of study has been satisfactorily completed;
(c) any candidate who fails to complete satisfactorily a unit of study at the second attempt will normally be deemed to have failed to complete the course requirements and their candidature will be terminated by the Dean;
(d) if a candidate fails to complete satisfactorily two units of study within the same key topic area at the first attempt, they will normally be deemed to have failed to complete the course requirements and their candidature will be terminated by the Dean.

Credit

11. A candidate who, before admission to candidature, has spent time in graduate study and, within the previous three years, has completed coursework considered by the Dean to be equivalent to units of study prescribed for the combined award course, may receive credit of up to 42 credit points towards the requirements for the Doctor of Clinical Psychology provided that the completed work was not counted toward the requirements of another degree.

Transfer to and from Doctor of Philosophy Candidature

12.
(1) The Director of Clinical Training in consultation with the Head of Department may recommend to the Dean of the Faculty of Science that a candidate withdraw from candidature for the combined award course and complete requirements for the degree of Doctor of Philosophy under such conditions as the University may determine.
(2) The Dean of the Faculty may readmit to candidature a candidate who has previously withdrawn from the combined award course as provided for in section (1) above and who has completed the requirements for the award of the degree of Doctor of Philosophy. Such a candidate shall complete the requirements for the degree of Doctor of Clinical Neuropsychology under such conditions as the Dean may determine but shall not be permitted to continue candidature for the award of the degree of Master of Science.
(3) The Dean of the Faculty may readmit to candidature a candidate who has previously withdrawn from the combined award course as provided for in section (1) above and who has not completed the requirements for the award of the degree of Doctor of Philosophy. Such a candidate will complete the requirements for the combined award course under such conditions as the Dean may determine.
(4) Except in exceptional circumstances, and with the permission of the Dean, readmission to candidature under subsections 2 and 3 above shall occur within fourteen semesters of withdrawal under subsection 1 above and within a maximum of nine years from commencement of candidature for the DCN/MSc.

Table 7.2 DCN/MSc requirements

Year	Sem.	Therapy Knowledge and Skills	Assessment Knowledge and Skills	Clinical Internships	Case Seminars	Research
1	1	PSYC6051AdultPsychological Disorders	PSYC6002Psychological Assessment of Adults	PSYC6034Neuropsychology Clinical Internship 1	PSYC6004 Ethics and Professional Practice PS YC6040 Neuropsychology Case Seminars 1	PSYC6005 Research 1
	2	PSYC6053 Developmental Disorders	PSYC6007 Psychological Assessment of Children PSYC6048 Neuroanatomy	PSYC6035 Neuropsychology Clinical Internship 2	PSYC6041 Neuropsychology Case Seminars 2	PSYC6010 Research 2
2	1	PSYC6033 Issues in Rehabilitation PSYC6052 Adult Neuropsychological Disorders	PSYC6054 Adult Neuropsychopathology PSYC6046 Seminars in Clinical Neuropsychology	PS YC6036 Neuropsychology Clinical Internship 3	PSYC6042 Neuropsychology Case Seminars 3	PSYC6015 Research 3
	2	PSYC6030 Paediatric Neuropsychological Disorders	PSYC6047 Seminars in Clinical Neuropsychology Adv	PSYC6037 Neuropsychology Clinical Internship 4	PS YC6063 Neuropsychology Case Seminars 4	
3	1	Nil	Nil	PS YC6059 Neuropsychology Clinical Internship and Seminars 5		
	2	Nil	Nil	PS YC6060 Neuropsychology Clinical Internship and Seminars 6		

Degrees of Master

Master of Science (MSc)

Resolutions of the Senate

1.
(1) The Faculty of Science may, on the recommendation of the Head of the Department concerned, admit to candidature for the degree of Master of Science an applicant who:
(a) is a graduate of the University of Sydney; and
(b) has, in the opinion of the Faculty, reached a first or second class honours standard:
(i) in the final year of an honours program for the degree of Bachelor of Science; or
(ii) in a program considered by the Faculty to be equivalent to a unit of study referred to in subsection (i), or has, in some other manner, acquired a standard of knowledge considered by the Faculty to be equivalent to a first or second class honours standard in a unit of study referred to in subsection (i);
(2) Notwithstanding subsection (1), the Academic Board may admit a person to candidature for the degree in accordance with the provisions of Part 9 of the University of Sydney (Amendment Act) Rule 1999.
(3) Subject to the approval of the Head of the Department, a candidate for the degree shall elect to proceed:
(a) either as a full-time or as a part-time candidate;
(b) either by research and thesis in accordance with section 6 or by coursework and essay in accordance with section 7; and
(c) except in the case of a candidate proceeding in accordance with Part 9 of the University of Sydney (Amendment Act) Rule, either within The University of Sydney or elsewhere.

2.
(1) A candidate to be full-time shall not keep the normal semesters but shall pursue candidature continuously throughout the year, except for a period of recreation leave and shall not have any substantial employment during the day.
(2) A candidate who does not comply with subsection (1) shall be regarded as a part-time candidate.

3.
(1) A candidate shall not present for examination for the degree earlier than one year after commencement of candidature.
(2) Except with the permission of the Faculty, a full-time candidate proceeding by research and thesis or any candidate proceeding by coursework and essay shall complete the requirements for the degree not later than two years after the commencement of candidature.
(3) Except with the permission of the Faculty, a part-time candidate proceeding by research and thesis shall complete the requirements for the degree not later than four years after the commencement of candidature.

4. Time spent by a candidate in advanced study in The University of Sydney before admission to candidature may be deemed by the Faculty to be time spent after such admission.

5.
(1) The Dean of the Faculty, on the recommendation of the Head of the Department concerned, shall appoint a full-time member of the academic staff or research staff of the University to act as supervisor of each candidate.
(2) Where the supervisor is a member of the research staff, the Dean of the Faculty, on the recommendation of the Head of the Department concerned, shall also appoint a member of the full-time academic staff as associate supervisor. Any person so appointed as associate supervisor must be capable of acting as supervisor in the event that the supervisor is no longer able to act.
(3) The Dean of the Faculty, on the recommendation of the Head of the Department concerned, may appoint a full-time member of the academic staff of the University or other appropriately qualified person to act as associate supervisor.
(4) The supervisor shall report annually to the Faculty, through the Head of Department, on the progress towards completion of the requirements for the degree of each candidate under his or her supervision.
(5) The Faculty, on the recommendation of the Head of the Department concerned, may terminate the candidature of any candidate who has not shown evidence of sufficient progress, in the opinion of the Faculty.

6.
(1) A candidate proceeding by research and thesis shall:
(a) carry out an original investigation on a topic approved by the Head of the Department concerned;
(b) write a thesis embodying the results of this investigation and state in the thesis generally in a preface and specifically in notes, the sources from which the information was taken, the extent to which the work of others has been used, and the proportion of the thesis claimed as original;
(c) lodge with the Registrar three copies of the thesis, typewritten and bound; and

(d) if required by the examiners, sit for an examination in the branch or branches of science to which the thesis relates.

(2) The thesis shall be accompanied by a certificate from the supervisor stating whether in the supervisor's opinion the form of presentation of the thesis is satisfactory.

(3) The Dean of the Faculty of Science on the recommendation of the head of department concerned, shall appoint two, or where the Dean considers it appropriate, more than two examiners of whom at least one shall be external to the University - i.e. not being a member of the staff of the University or holding a clinical academic title, and of whom one may be the person appointed to act as supervisor of the candidate.

(4) The examiners shall report to the Faculty which shall determine the result of the examination.

(5) A candidate may not present as the thesis any work which has been presented for a degree or diploma at this or another tertiary institution, but the candidate shall not be precluded from incorporating such work in the thesis, provided that in presenting the thesis the candidate indicates the part of the work which has been so incorporated.

(6) The Registrar shall lodge one copy of the thesis with the Librarian if the degree is awarded.

7.

(1) A candidate proceeding by course work and essay shall:

(a) attend such course of study and pass such examinations in each unit of study as the Faculty, on the recommendation of the Department concerned, shall by resolution prescribe;

(b) write a substantial essay on a topic approved by the Head of the Department concerned and state in the essay, generally in a preface and specifically in notes, the sources from which the information was taken and the extent to which the work of others has been used; and

(c) lodge with the Registrar two typewritten copies of the essay.

(2) The Dean of the Faculty, on the recommendation of the Head of the Department concerned, shall appoint two examiners to examine the essay. One may be the person appointed to act as supervisor of the candidate.

(3) The examiners shall report to the Faculty which shall determine the result of the examination.

(4) The candidate may not present as the essay any work which has been presented for an award course at this or another tertiary institution, but the candidate will not be precluded from incorporating such in the essay, provided that in presenting the essay the candidate indicates the part of work which has been so incorporated.

Master of Science (Environmental Science) (MSc(EnvironSc))

Resolutions of the Senate

Eligibility for admission

1. The Dean of the Faculty of Science may admit to candidature:

(i) graduates who have completed an Honours degree majoring in a Science discipline that has a significant environmental emphasis, or in Environmental Science, or equivalent; or

(ii) graduates who have completed the requirements for a Graduate Diploma majoring in a Science discipline that has a significant environmental emphasis, or in Environmental Science, or equivalent as per section 9; or

(hi) graduates who have completed prior postgraduate study in a Science discipline that has a significant environmental emphasis, or in Environmental Science.

Availability

2.

(1) Admission to candidature may be limited by a quota. In determining the quota the University will take into account:

(i) availability of resources including space, laboratory and computing facilities; and

(ii) availability of adequate and appropriate supervision.

(2) In considering an application for admission to candidature the Program Committee for Environmental Science and the Faculty shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 1 above.

Method of progression

3.

(1) A candidate for the degree shall proceed by research and thesis in accordance with section 6.

(2) A candidate for the degree must complete all other requirements for the degree as dictated by the Chair of the Program Committee for Environmental Science and in accordance with section 6.

Time limits

4. A candidate may proceed on either a full-time or a part-time basis.

5.

(1) A full-time candidate shall complete the requirements for the degree not earlier than the end of the third semester and not later than the end of the fourth semester of candidature, except as described in Section 10 or unless otherwise determined by the Faculty. A full-time candidate shall not keep the normal semesters but shall pursue candidature continuously throughout the year, except for periods of leave approved by the candidate's supervisor, and shall not have any substantial employment during the day.

(2) A part-time candidate shall complete the requirements for the degree not earlier than the end of the third semester and not later than the end of the eighth semester of candidature, except as described in Section 10 or unless otherwise determined by the Faculty.

(3) Any candidate who does not comply with subsection 1 shall be deemed to be a part-time candidate.

Requirements for the degree

6.

(1) A candidate for the degree is required to:

(i) carry out an original investigation on a topic approved by the Chair of the Program Committee for Environmental Science; and

(ii) write a thesis embodying the results of this investigation, stating in the thesis the sources from which the information was taken, the extent to which the work of others has been used, and the proportional of the thesis claimed as original work.

(2) Candidates for the degree must prove to the satisfaction of the Program Committee for Environmental Science a breadth of knowledge in environmental issues.

(3) Candidates for the degree must satisfactorily complete any coursework requirements prescribed by the Chair of the Program Committee for Environmental Science. This can include up to 24 credit points of coursework covering material new to the candidate and selected from units of study approved from time to time by the Faculty. A unit of coursework study shall consist of such lectures, seminars, tutorial instruction, essays, exercises or practical work as may be prescribed. In these resolutions, "to complete a unit of study" or any derivative expression means:

(i) to attend the lectures, and the meetings, if any, for seminars or tutorial instruction;

(ii) to complete satisfactorily the essays, exercises and practical work if any; and

(iii) to pass any other examination of the unit of study that may apply.

Examination

7.

(1) A candidate shall:

(a) attend such course of study and pass such examinations in each unit of study as the Faculty, on the recommendation of the Chair of the Program Committee - Environmental Science, shall by resolution prescribe;

(b) carry out an original investigation on a topic approved by Chair of the Program Committee - Environmental Science;

(c) write a thesis embodying the results of this investigation and state in the thesis generally in a preface and specifically in notes, the sources from which the information was taken, the extent to which the work of others has been used, and the proportion of the thesis claimed as original;

(d) lodge with the Registrar three copies of the thesis, typewritten and bound; and

(e) if required by the examiners, sit for an examination in the branch or branches of science to which the thesis relates.

(2) The thesis shall be accompanied by a certificate from the supervisor stating whether in the supervisor's opinion the form of presentation of the thesis is satisfactory.

(3) The Dean of the Faculty of Science on the recommendation of the head of department concerned, shall appoint two, or where the Dean considers it appropriate, more than two examiners of whom at least one shall be external to the University - i.e. not being a member of the staff of the University or holding a clinical academic title, and of whom one may be the person appointed to act as supervisor of the candidate.

(4) The examiners shall report to the Faculty which shall determine the result of the examination

(5) A candidate may not present as the thesis any work which has been presented for a degree or diploma at this or any another tertiary institution, but the candidate shall not be precluded from incorporating such work in the thesis, provided that in presenting the thesis the candidate indicates the part of the work which has been so incorporated.

(6) The Registrar shall lodge one copy of the thesis with the Librarian if the degree is awarded.

Progress

8. The Faculty may:

(i) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the degree; and

(ii) terminate the candidature where the candidate does not show good cause.

Admission from a Graduate Diploma of Science

9. A candidate may seek admission into the MSc (Environmental Science) from any of the Graduate Diploma of Science programs, including those of Applied Science and Environmental Science, as follows:

(1) A candidate who has fully completed the requirements for a Graduate Diploma of Science or Applied Science is eligible to apply for admission into the MSc (Environmental Science). Candidates who are considered not to have the required breadth of knowledge in environmental issues may need to complete some further coursework as per section 6.

(2) A candidate who has completed 24 credit points of Environmental Science coursework at Credit grade or above towards the requirements for a postgraduate qualification in Science or Applied Science may apply for admission into the MSc (Environmental Science). Candidates who gain admission in this manner may still need to complete some further coursework as per section 6.

10. For a candidate who gains admission into the MSc (Environmental Science) from a Graduate Diploma of Science or Applied Science, the duration of candidature is as follows:

(1) Where a full-time candidate has completed the requirements for a Graduate Diploma of Science or Applied Science immediately prior to admission into the MSc (Environmental Science), the minimum duration for completion of the requirements of the MSc (Environmental Science) is two semesters.

(2) Where a part-time candidate has completed the requirements for the Graduate Diploma of Science or Applied Science immediately prior to admission into the MSc (Environmental Science), the minimum duration for completion of the requirements of the MSc (Environmental Science) is three semesters.

In these resolutions, the term "immediately" means that the Graduate Diploma requirements were completed in the previous semester.

Master of Information Technology (MInfTech)

Resolutions of the Senate

Eligibility for admission

1. The Dean of the Faculty of Science may admit to candidature:

(1) graduates who have completed a Bachelor's degree, with results equivalent to Credit average or above in a major sequence of study in any aspect of Information Technology; or

(2) graduates who have completed a Bachelor of Engineering degree with results equivalent to Credit average or above in a major sequence of study in Computer Engineering, Software Engineering or Telecommunications Engineering; or

(3) persons who have completed the GradDipIT at the University of Sydney, with Credit average results or above; or

(4) persons who have completed the GradDipComp at the University of Sydney.

Eligibility for admission to majors

2. The Dean of the Faculty of Science shall only admit students to units of study in the defined majors in the Master of Information Technology, who have completed preliminary study in the relevant major area of study.

Availability

3.

(1) Admission to the Master of Information Technology may be limited by a quota.

(2) In determining the quota the University will take into account:

(a) availability of resources including space, laboratory and computing facilities; and

(b) availability of adequate and appropriate supervision.

(3) In considering an application for admission to candidature, the Head of the School of Information Technologies and the Dean shall select, in preference, applicants who are most meritorious in terms of Section 1 above.

Time limits

4. A candidate may proceed on either a full-time or a part-time basis.

(1) A full-time candidate shall complete the requirements for the award not earlier than the end of the second semester of candidature, and not later than the end of the fourth semester of candidature, unless otherwise determined by the Dean.

(2) A part-time candidate shall complete the requirements of the award not earlier than the end of the fourth semester of candidature, and not later than the end of the eighth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty

Requirements for the courses

(Graduate Certificate in Information Technology, Graduate Diploma in Information Technology and Master of Information Technology)

1.

(1) Candidates for the Graduate Certificate in Information Technology are required to complete satisfactorily units of study granting a minimum of 24 credit points selected from units of study, excluding INFO 5990 and IT project units of study, approved for the Master of Information Technology.

(2) Candidates for the Graduate Diploma in Information Technology are required to complete satisfactorily units of study granting a minimum of 36 credit points selected from units of study approved for the Master of Information Technology. Of the 36 credit points, a maximum of 24 credit points can be selected from Foundational units of study; and at least 12 credit points should come from Specialist units of study, excluding INFO 5990 and IT project units of study.

(3) Candidates for the Master of Information Technology are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from the units of study approved for the Master of Information Technology, satisfying the conditions approved from time to time by the Faculty. Of the 48 credit points, a maximum of 24 credit points can be selected from Foundational units; and at least 24 credit points should come from Specialist units or IT projects. Enrolment in IT projects will be approved only for those students who have completed at least 24 credit points from Foundational or Specialist units at Credit average or above and may be limited by quota.

(4)

(a) To qualify for the award of Master of Information Technology students must complete one of the defined majors.

(b) The defined majors for the Master of Information Technology are Business Information Systems, Computer Engineering, Computer Networks, Computer Science, Database Management Systems, E-Business Technologies, Financial Modelling, Multimedia Technology, Project Management,

Software Engineering, Telecommunications Engineering and Health Informatics,

(c) The testamur for the Master of Information Technology shall specify the major(s) completed in order to qualify for the award.

Examination

2. On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

Progress

3.

(1) Candidates for the Master of Information Technology, the Graduate Diploma in Information Technology and the Graduate Certificate in Information Technology shall be governed by the rules in 3 (3), 3(4) and 3(5);

(2) The Dean may:

(a) advise a student when their performance has been such that a rule would normally be applied and call upon that student to show good cause why the rule should not be applied; and

(b) where the student does not show good cause, apply the rule.

(3) A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Information Technology will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Information Technology;

(4) A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Information Technology and/or the Graduate Diploma in Information Technology will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Information Technology;

(5) A student who has failed a cumulative total of more than 18 credit points in the Master of Information Technology and/or the Graduate Diploma in Information Technology and/or the Graduate Certificate in Information Technology will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.

Credit

4. Credit is available in the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology and Master of Information Technology for postgraduate study which has been undertaken in these award courses within the previous three years and for which no award has been conferred. If an award has been conferred, credit for study in these award courses is limited to 12 credit points.

Transfer

5. Students enrolled in either the GradCertIT, GradDipIT, or MInfTech are not permitted to transfer to the Master of Applied Information Technology course.

Master of Information Technology Management (MInfTechMan)

Resolutions of the Senate

Eligibility for admission

1. The Dean of the Faculty of Science may admit to candidature:

(1) graduates who have completed a bachelor's degree, with results equivalent to Credit average or above; or

(2) persons who have completed the GradDipITMan at the University of Sydney, with Credit average results or above; or

(3) persons who have completed the GradDipComp at the University of Sydney.

The bachelor's degree does not have to be an Information Technology degree, but it should contain a significant amount of technical subjects related to computing, as typically found in an IT, Science, or Engineering degree. Applicants holding a bachelor's degree in other areas, such as Finance, Commerce, Health Sciences, and Social Sciences, who have completed relevant IT subjects will also be eligible. Applicants holding a bachelor's degree in any discipline and who have worked in Information Technology for more than five years are eligible.

Availability

2.

(1) Admission to the Master of Information Technology Management may be limited by a quota.

(2) In determining the quota the University will take into account:

(a) availability of resources including space, laboratory and computing facilities; and

(b) availability of adequate and appropriate supervision.

(3) In considering an application for admission to candidature, the Head of the School of Information Technologies and the Dean shall select, in preference, applicants who are most meritorious in terms of Section 1 above.

Time limits

3. A candidate may proceed on either a full-time or a part-time basis.

(1) A full-time candidate shall complete the requirements for the award not earlier than the end of the second semester of candidature, and not later than the end of the fourth semester of candidature, unless otherwise determined by the Dean.

(2) A part-time candidate shall complete the requirements of the award not earlier than the end of the fourth semester of candidature, and not later than the end of the eighth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty

Requirements for the courses

(Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management, and Master of Information Technology Management)

1.

(1) Candidates for the Graduate Certificate in Information Technology Management are required to complete satisfactorily units of study granting a minimum of 24 credit points selected from units of study approved for the Master of Information Technology Management. Credit points must be selected from Core units of study, excluding IT Research Project units of study. INFO5990 Professional Practice in IT must be completed as a Core unit of study.

(2) Candidates for the Graduate Diploma in Information Technology Management are required to complete satisfactorily units of study granting a minimum of 36 credit points selected from units of study approved for the Master of Information Technology Management. Of the 36 credit points, a minimum of 30 credit points must be selected from Core units of study, excluding IT Research Project units of study. INFO5990 Professional Practice in IT must be completed as a Core unit of study, and INF05991 IT Professional Services must be completed as a Core unit of study. A maximum of 6 credit points of Elective units of study can be taken.

(3) Candidates for the Master of Information Technology Management are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from units of study approved for the Master of Information Technology Management. Of the 48 credit points, a minimum of 30 credit points must be selected from Core units of study. INFO5990 Professional Practice in IT must be completed as a Core unit of study, and INF05991 IT Professional Services must be completed as a Core unit of study, and INF05992 Understanding IT Innovations must be completed as a Core unit of study. A maximum of 18 credit points of Elective units of study can be taken. Enrolment in IT projects will be approved only for those students who have completed at least 24 credit points and may be limited by quota. After completing 24 credit points of coursework, students who achieve Credit average results or above in their coursework may select 12 credit points of Information Technology Project units of study among their Core units. After completing 24 credit points of coursework, students who have Distinction average results or above may be eligible for the Research Path subject to the approval of the Head of the School of Information Technologies and the Dean. Students who pursue the Research Path must study INFO4990

Research Methods, and select 18 credit points from IT Research Project units of study among their Core units. Students who pursue the Research Path do not have to take INF05991 IT Professional Services and INF05992 Understanding IT Innovations as Core units of study.

Examination
2. On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

Progress
3.
(1) Candidates for the Master of Information Technology Management, the Graduate Diploma in Information Technology Management, and the Graduate Certificate in Information Technology Management shall be governed by the rules in 3(3), 3(4) and 3(5);
(2) The Dean may:
(a) advise a student when their performance has been such that a rule would normally be applied and call upon that student to show good cause why the rule should not be applied; and
(b) where the student does not show good cause, apply the rule.
(3) A student who has failed a cumulative total of 12 credit points at any stage of enrolment in the Master of Information Technology Management will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Information Technology Management;
(4) A student who has failed a cumulative total of 18 credit points at any stage of enrolment in the Master of Information Technology Management and/or the Graduate Diploma in Information Technology Management will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Information Technology Management;
(5) A student who has failed a cumulative total of more than 18 credit points in the Master of Information Technology Management and/or the Graduate Diploma in Information Technology Management and/or the Graduate Certificate in Information Technology Management will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.

Credit
4. Credit is available in the Graduate Certificate in Information Technology Management, Graduate Diploma in Information Technology Management, and Master of Information Technology Management for postgraduate study which has been undertaken in these award courses within the previous three years and for which no award has been conferred. If an award has been conferred, credit for study in these award courses is limited to 12 credit points.

Transfer
5.
(1) Students enrolled in either the GradCertITMan, GradDipITMan, or MInfTechMan are not permitted to transfer to the Master of Information Technology course.
(2) Students enrolled in either the GradCertITMan, GradDipITMan, or MInfTechMan are not permitted to transfer to the Master of Applied Information Technology course.

Master of Applied Information Technology (MApplIT)

Note: This degree is no longer available to new students from 2005.

Resolutions of the Senate

Eligibility for admission
1. The Dean of the Faculty of Science may admit to candidature:
(1) graduates who have completed a bachelor's degree in Physical Science or Engineering, or a Bachelor's degree with some background in Information Technology or Mathematics; or
(2) persons who have completed the GradDipApplIT at the University of Sydney, with Credit average results or above.

Availability
2.
(1) Admission to the Master of Applied Information Technology may be limited by a quota.
(2) In determining the quota, the University will take into account:
(a) availability of resources including space, laboratory and computing facilities; and
(b) availability of adequate and appropriate supervision.
(3) In considering an application for admission to candidature, the Head of the School of Information Technologies and the Dean shall select, in preference, applicants who are most meritorious in terms of section 1 above.

Time limits
3. A candidate may proceed on either a full-time or a part-time basis. In determining the length of candidacy below, the Dean shall include time previously spent as a candidate for the GradCertApplIT or the GradDipApplIT course.
(1) A full-time candidate shall complete the requirements for the award not earlier than the end of the third semester of candidature, and not later than the end of the sixth semester of candidature, unless otherwise determined by the Dean.
(2) A part-time candidate shall complete the requirements of the award not earlier than the end of the sixth semester of candidature, and not later than the end of the tenth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty

Requirements for the courses
(Graduate Certificate in Applied Information Technology, Graduate Diploma in Applied Information Technology and Master of Applied Information Technology)
1.
(1) Candidates for the Graduate Certificate in Applied Information Technology are required to complete satisfactorily units of study granting a minimum of 36 credit points selected from units of study approved for the Master of Applied Information Technology. Of the 36 credit points, 24 credit points must be selected from Elementary units of study; and at least 12 credit points should come from Foundational and Specialist units of study, excluding INFO 5990 and IT project units of study.
(2) Candidates for the Graduate Diploma in Applied Information Technology are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from units of study approved for the Master of Applied Information Technology. Of the 48 credit points 24 credit points must be selected from Elementary units of study; and at least 24 credit points should come from Foundational and Specialist units of study, excluding INFO 5990 and IT project units of study.
(3) Candidates for the Master of Applied Information Technology are required to complete satisfactorily units of study granting a minimum of 72 credit points selected from the units of study approved for the Master of Applied Information Technology. Of the 72 credit points, 24 credit points must be from Elementary units of study; a maximum of 24 credit points must be selected from Foundational units of study; and at least 24 credit points should come from Specialist or IT project units of study. Enrolment in IT projects will be approved only for those students who have completed at least 24 credit points from Foundational or Specialist units at Credit average or above and may be limited by quota.
(4)
(a) To qualify for the award of Master of Applied Information Technology students must complete one of the defined majors.
(b) The defined majors for the Master of Applied Information Technology are Computer Networks, Computer Science, Database Management Systems, Multimedia Technology and Software Engineering.

(c) The testamur for the Master of Applied Information Technology shall specify the major completed in order to qualify for the award.

Examination
2. On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

Progress
3. The Dean may:
(1) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards the completion of the requirements for the Master of Applied Information Technology; and
(2) terminate the candidature where the candidate does not show good cause.

Credit
4. Credit is available in the Graduate Certificate in Applied Information Technology, Graduate Diploma in Applied Information Technology and Master of Applied Information Technology for postgraduate study which has been undertaken in these award courses within the previous three years and for which no award has been conferred. If an award has been conferred, credit for study in these award courses is limited to 12 credit points.

Transfer
5. Students enrolled in either the GradCertApplIT, GradDipApplIT, or MApplIT are not permitted to transfer to the Master of Information Technology course.

Master of Medical Physics (MMedPhys)

Resolutions of the Senate

Eligibility for admission
1. The Faculty may, on the recommendation of the Head of the School of Physics, admit to candidature for:
(1) the Graduate Diploma in Medical Physics
(i) an applicant who is the holder of a bachelor's degree in Science or Engineering from the University of Sydney provided the applicant has achieved a major in physics, or equivalent.
(ii) a graduate of another university or appropriate institution who has equivalent qualifications to those specified in subsection (a);
(2) the Master of Medical Physics
(i) a person who has the qualifications specified in subsection (l)(i), or
(ii) an applicant who has completed requirements for the Graduate Diploma in Medical Science.

Availability
2.
(1) Admission to either course may be limited by quota.
(2) In determining the quota the University will take into account:
(i) availability of resources including space, library, equipment, laboratory and computing facilities; and
(ii) availability of adequate and appropriate supervision.
(3) In considering an application for admission to candidature the Head of Department and the Faculty shall take account of the quota and will select in preference applicants who are most meritorious in terms of Section 1 above.

Time limits
3. A candidate may proceed on either a full-time or part-time basis.
(1) for the Graduate Diploma:
(i) A full-time candidate shall complete the requirements for the Graduate Diploma not earlier than the end of the second semester of candidature, and not later than the fourth semester of candidature.
(ii) A part-time candidate shall complete the requirements for the Graduate Diploma not earlier than the end of the fourth semester of candidature, and not later than the eighth semester of candidature.
(2) for the Master's:
(i) A full-time candidate shall complete the requirements for the Masters degree not earlier than the end of the third semester of candidature, and not later than the fourth semester of candidature.
(ii) A part-time candidate shall complete the requirements for the Masters degree not earlier than the end of the fourth semester of candidature, and not later than the eighth semester of candidature.

Method of progression
4.
(1) A candidate for the Graduate Diploma or Master's shall proceed by completing units of study as prescribed by the Faculty.
(2) A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed. In these resolutions, "to complete a unit of study" or any derivative expression means:
(i) to attend lectures and meetings, if any, for seminars and tutorial instruction;
(ii) to complete satisfactorily the essays, exercises, practical and project work if any; and
(iii) to pass any other examination of the unit of study that may apply.

Examination
5. On completion of the requirements for the course, the Faculty shall determine the results of the candidature, on the recommendation of the Head of the School of Physics.

Progress
6. The Faculty may:
(1) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the course; and
(2) terminate the candidature where the candidate does not show good cause.

Master of Nutrition and Dietetics (MNutrDiet)

Resolutions of the Senate

Award of the degree
1. The degree of Master of Nutrition and Dietetics shall be awarded in two grades, namely Pass and, in the case of an outstanding candidate, Pass with Merit.

Eligibility for admission
2.
(1) The Faculty of Science, on the recommendation of the Nutritional Science Program Committee, may admit to candidature for the degree:
(i) graduates of the University of Sydney who have, unless exempted by the Nutritional Science Program Committee, completed acceptable units of study in Biochemistry and Physiology; or
(ii) persons who have satisfied the requirements for the award of the Diploma of Nutrition and Dietetics.

Method of progression and degree requirements
3.(1)
(a) A candidate for the degree shall be enrolled full-time and, except with the permission of the Faculty of Science, shall complete the requirements for the degree no later than two years from the date of first enrolment.
(b) Entry to the second year of candidature shall be subject to satisfactory progress in the first year. If progress is not considered satisfactory, a candidate may be asked by the Faculty to show cause why he or she should be permitted to re-enrol.
(c) A candidate for the degree who has been admitted on the basis of having satisfied the requirements for the award of the Diploma in Nutrition and Dietetics, may elect to proceed as a full-time or part-time candidate and shall complete the requirements for the degree not later than six months from the date of first enrolment, in the case of a full-time candid-

ate and not more than twelve months from the date of enrolment, in the case of a part-time candidate,
(d) A unit of study shall consist of lectures together with such tutorial instruction, essays, exercises or practical work as may be prescribed.

(2) A candidate shall complete in the first year of candidature such courses as may be prescribed by the Nutritional Science Program Committee in: Nutritional Biochemistry, Nutritional Science, Foods and Food Science, Nutrition in Individuals, Nutrition in Populations, Principles of Dietetic Practice, Clinical Nutrition, Nutrition Management, Communications.

(3) In the second year of candidature a candidate will:
(a) undertake training in the dietetics departments of primary health care settings;
(b) complete further units of study as prescribed by the Nutritional Science Program Committee; and
(c) undertake a project approved by the Head of the Human Nutrition unit. The result of this project shall be presented for examination in the form of a long essay.

4. A candidate admitted under section 2(l)(ii):
(a) may be granted credit for up to three semesters towards the degree; and
(b) will undertake a project approved by the Head of the Human Nutrition unit. The result of this project shall be presented for examination in the form of a long essay.

Examination

5. On completion of the requirements for the degree, the Faculty shall determine the result of the candidature, on the recommendation of the Nutritional Science Program Committee, acting on a report from the Head of the Human Nutrition unit.

Master of Nutritional Science (MNutrSc)

Resolutions of the Senate

Award of the degree

1. The degree of Master of Nutritional Science shall be awarded in two grades, namely Pass and, in the case of an outstanding candidate, Pass with Merit.

Eligibility for admission

2.
(1) The Faculty of Science, on the recommendation of the Nutritional Science Program Committee, may admit to candidature for the degree graduates of the University of Sydney, who have, unless exempted by the Nutritional Science Program Committee, completed acceptable units of study in Biochemistry and Physiology.
(2) The Academic Board, on the recommendation of the Nutritional Science Program Committee and of the Faculty, may admit to candidature for the degree graduates of other universities who have qualifications equivalent, in the opinion of the Academic Board, to those specified in subsection (1), and on such conditions as the Nutritional Science Program Committee may prescribe.

Method of progression and degree requirements

3.(1)
(a) A candidate for the degree shall proceed full-time and, except with the permission of the Faculty of Science, shall complete the requirements for the degree no later than two years from the date of first enrolment.
(b) Entry to the second year of candidature shall be subject to satisfactory progress in the first year. If progress is not considered satisfactory, a candidate may be asked by the Faculty to show cause why he or she should be permitted to re-enrol.
(c) A unit of study shall consist of lectures together with such tutorial instruction, essays, exercises or practical work as may be prescribed.

(2) A candidate shall complete in the first year of candidature such courses as may be prescribed by the Nutritional Science Program Committee in: Nutritional Biochemistry, Nutritional Science, Foods and Food Science, Nutrition in Individuals, Nutrition in Populations, Principles of Dietetic Practice, Clinical Nutrition, Nutrition Management, and Communications.

(3) A candidate in the second year of candidature shall proceed by research and thesis. A candidate shall:
(a) carry out an original investigation on a topic approved by the Head of the Human Nutrition unit;
(b) write a short thesis embodying the results of the investigation and state in the thesis, generally in a preface and specifically in notes, the sources from which the information was taken, the extent to which the work of others has been made use of, and the proportion of the thesis which the student claims as original; and
(c) lodge with the Registrar three copies of the thesis, typewritten and bound.

4.
(1) The thesis shall be accompanied by a certificate from the supervisor stating whether in his or her opinion the form of the presentation of the thesis is satisfactory.
(2) A candidate may not present as the thesis any work which has been presented for a degree at this or another tertiary institution, but shall not be precluded from incorporating such work in the thesis, provided that in presenting the thesis indications are given to the part of the work which has been so incorporated.
(3) The Registrar shall lodge one copy of the thesis with the Librarian if the degree is awarded.

Supervision

5. The Faculty of Science shall appoint, on the recommendation of the Head of the Human Nutrition unit, a full-time member of the teaching staff of the University to act as the supervisor for each candidate.

Examination

6. The Dean of the Faculty, on the recommendation of the Head of the Human Nutrition unit, shall appoint two or, where the Dean considers it appropriate, more than two examiners of whom one may be the person appointed to act as supervisor of the candidate.

7. On completion of the requirements for the degree, the Faculty shall determine the results of the candidature, on the recommendation of the Nutritional Science Program Committee, acting on a report from the Head of the Human Nutrition unit.

Master of Environmental Science and Law (MEnviSciLaw)

Resolutions of the Senate

Eligibility for admission

1. The Dean of the Faculty of Science may admit to candidature:
(1) graduates of the University of Sydney holding the degree of Bachelor of Science or Bachelor of Laws; or
(2) graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection (1).

Availability

2.
(1) Admission to candidature may be limited by a quota. In determining the quota, the Dean will take into account:
(a) availability of resources including space, laboratory and computing facilities; and
(b) availability of adequate and appropriate supervision.
(2) In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of Section 1 above.

Availability of units of study

3. All units of study for a particular subject area may not be available every semester. The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculties of Science and Law, or elsewhere in the University.

Time limits
4. A candidate may proceed on either a full-time, or a part-time basis. A candidate for the Master of Environmental Science and Law shall complete the requirements for the award in a minimum of two semesters and a maximum often semesters, and except with permission of the Faculty within six calendar years of admission to candidature.

Authority of the Deans
5. The Deans of Science and Law shall jointly exercise authority in any matter concerning the course not otherwise dealt with in these resolutions.

Resolutions of the Faculty

Requirements for the degree
1. Candidates for the Master of Environmental Science and Law are required to complete satisfactorily 48 credit points selected from units of study approved by the Faculties of Science and Law including:
(1) a core unit of study (LAWS6044);
(2) a minimum of 24 credit points selected from units of study offered by each Faculty.

Examination
2. On completion of the requirements for the degree, the Dean shall determine the results of the candidature.

Progress
3. The Dean may:
(1) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the degree; and
(2) terminate the candidature where the candidate does not show good cause.

Credit
4. A candidate who, before admission to candidature, has spent time in graduate study and, within the previous three years, has completed coursework considered by the Faculty to be equivalent to units of study prescribed for the degree, may receive credit of up to 12 credit points towards the requirements for the degree of Master of Environmental Science and Law.

Graduate diplomas

Graduate Diploma in Science (GradDipSc)

Resolutions of the Senate

Eligibility for admission
1.
(1) The Faculty may, on the recommendation of the head of the department concerned, admit to candidature for the Graduate Diploma in Science an applicant who is a holder of a bachelor's degree from the Faculty of Science, from the University of Sydney.
(2) The Academic Board, in accordance with the provisions of Part 9 of the University of Sydney (Amendment Act) Rule 1999, on the recommendation of the relevant Head of Department and of the Faculty, may admit to candidature for the graduate diploma graduates who have qualifications equivalent, in the opinion of the Academic Board, to those specified in subsection (1).

Availability
2.
(1) Admission to the graduate diploma may be limited by quota.
(2) In determining the quota the University will take into account:
(a) availability of resources including space, library, equipment, laboratory and computing facilities; and
(b) availability of adequate and appropriate supervision.
(3) In considering an application for admission to candidature the Head of Department and the Faculty shall take account of the quota and will select in preference applicants who are most meritorious in terms of Section 1 above.

Method of progression and time limits
3. A candidate shall engage in a program of work equivalent to that required for completion of the relevant fourth year of a bachelor's degree in the Faculty of Science by completing the honours units of study offered by the department concerned either as a full-time student for a period of one year or, with the approval of the head of department concerned, as a part-time student for a period of two years.

Examination
4. The award of the graduate diploma shall be subject to the completion of the program of work and examinations to the satisfaction of the Faculty.

Progress
5. The Faculty may call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the graduate diploma and where, in the opinion of the Faculty, the candidate does not show good cause, terminate the candidature.

Graduate Diploma in Science (Microscopy and (Microanalysis) (GradDipSc(Micr & An))

Note: This degree is no longer available to new students from 2002.

Graduate Diploma in Science (Psychology) (GradDipSc(Psych))

Resolutions of the Senate

Eligibility for admission
1.
(1) The Faculty of Science, on the recommendation of the appropriate Interdepartmental Committee, may admit to candidature the following:
(a) Graduate Diploma in Science (Microscopy and Microanalysis): An applicant who is a holder of the award course of Bachelor of Science or Bachelor of Engineering, or any other award course of the University of Sydney.
(b) Graduate Diploma in Science (Psychology): An applicant who is a holder of a Bachelors degree with an APS accredited major in Psychology from a recognised tertiary institution within the past ten years and who has achieved a minimum of Credit average in Senior (third year) units of study which includes units of study in statistics/research methods which meet the requirements of the Department.
(2) The Academic Board, on the recommendation of the appropriate Interdepartmental Committee and of the Faculty, may admit to candidature for the graduate diploma graduates of other universities or other appropriate institutions who have qualifications equivalent, in the opinion of the Academic Board, to those specified in subsection (1).

Availability
2.
(1) Admission to the graduate diploma may be limited by quota.
(2) In determining the quota the University will take into account:
(a) availability of resources including space, library, equipment, laboratory and computing facilities; and
(b) availability of adequate and appropriate supervision.
(3) In considering an application for admission to candidature the Interdepartmental Committee and the Faculty shall take account of the quota and will select in preference applicants who are most meritorious in terms of Section 1 above.

Time limits
3. A candidate for the Graduate Diploma in Science (Psychology) shall proceed as a full-time student for a period of two semesters or, with the approval of the Interdepartmental Committee, as a part-time student for four semesters; a candidate for the Graduate Diploma in

Science (Microscopy and Microanalysis) shall proceed as a full-time student for a period of two semesters or as a part-time student for up to eight semesters.

Method of progression
4. A candidate shall complete coursework for the graduate diploma as prescribed from time to time by resolution of the Faculty.

Examination
5. A candidate may be tested by written and oral examinations, assignments, exercises and practical work or any combination of these.

6. On completion of the requirements for the graduate diploma the results of the examination of the coursework and participation in the seminar series shall be reported by the Interdepartmental Committee to the Faculty which shall determine the result of the candidature.

Progress
7. The Faculty may call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the graduate diploma and where, in the opinion of the Faculty, the candidate does not show good cause, terminate the candidature.

Resolutions of the Faculty

Requirements for the course
1. A unit of study shall consist of lectures together with such tutorial instructions, essays, exercises or practical work as may be prescribed. In these resolutions, to "complete a unit of study" and derivative expressions shall mean:
(i) to attend the lectures and the meetings, if any, for tutorial instruction;
(ii) to complete satisfactorily the essays, exercises and the practical work, if any; and
(iii) to pass the examination on the unit of study.

2. A candidate shall complete coursework to the value of 48 credit points. The structure of the program is given in Table 7.3.

3. Satisfactory progress shall be as determined by the Faculty.

Table 7.3 GradDipSc(Psych) requirements

Unit of study		Credit points
Full-time students		
Semester 1 Core units - 24 credit points		
PSYC 4500	Research Project (A)	10
PSYC 4501	Psychological Research Methods	8
PSYC 4503	Special Fields Topic (A)	6
Semester 2 Core units - 24 credit points		
PSYC 4505	Research Project (B)	10
PSYC 4502	Ethics and Current Issues in Psychology	2
Semester 2 Optional units of study (select 2 electives)		
PSYC 4509	Problem Gambling	6
PSYC 4506	Health & Safety Psychology Issues	6
PSYC 4507	Counselling Psychology	6
PSYC 4508	Psychology of Addiction	6
Part-time students		
Year 1, Semester 1-18 credit points		
PSYC 4500	Research Project (A)	10
PSYC 4501	Psychological Research Methods	8
Year 1, Semester 2-12 credit points		
PSYC 4505	Research Project (B)	10
PSYC 4502	Ethics	2
Year 2, Semester 1-6 credit points		
PSYC 4503	Special Fields Topic	6
Year 2, Semester 2- 12 credit points		
Two Electives		12

Current departmental rules on progress

A candidate cannot repeat any part of the Graduate Diploma if he or she fails the Research project and at least one other component OR passes the Research Project but fails more than two components. If the candidate fails either the Research Project or one other component, permission may be granted for the candidate to repeat that unit the following year.

Graduate Diploma in Computing (GradDipComp)

Resolutions of the Senate

Eligibility for admission
1. The Dean of the Faculty of Science may admit to candidature:
(1) graduates who have completed a bachelor's degree, with results equivalent to Credit average or above, and who have demonstrated significant numeracy skills by completing relevant subjects with a mathematical foundation; or
(2) graduates who have completed a bachelor's degree, with results equivalent to Credit average or above, and who have worked in Information Technology for more than 5 years, and can offer evidence of prior learning which is considered to demonstrate the knowledge and aptitude required to undertake this course.

Availability
2.
(1) Admission to the Graduate Diploma in Computing may be limited by a quota.
(2) In determining the quota the University will take into account:
(a) availability of resources including space, laboratory and computing facilities; and
(b) availability of adequate and appropriate supervision.
(3) In considering an application for admission to candidature, the Head of the School of Information Technologies and the Dean shall select, in preference, applicants who are most meritorious in terms of Section 1 above.

Time limits
3. A candidate may proceed on either a full-time or a part-time basis.
(1) A full-time candidate shall complete the requirements for the award not earlier than the end of the second semester of candidature, and not later than the end of the fourth semester of candidature, unless otherwise determined by the Dean.
(2) A part-time candidate shall complete the requirements of the award not earlier than the end of the fourth semester of candidature, and not later than the end of the eighth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty

Requirements for the course
1. Candidates for the Graduate Diploma in Computing are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from units of study approved for the Graduate Diploma in Computing.

2. Satisfactory completion of the Graduate Diploma in Computing for purposes of entry into the Master of Information Technology require that a candidate has not failed more than 12 credit points of units of study in the Graduate Diploma in Computing.

Examination
3. On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

Progress
4. The Dean may require any student who has failed a cumulative total of 18 credit points or more at any stage of enrolment in the Graduate Diploma in Computing to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.

Credit
5. Credit is not available in the Graduate Diploma in Computing for previous study unless it was postgraduate study undertaken in this award course within the previous three years. Units of study completed in the Graduate Diploma in Computing cannot be counted as units of study completed within the Graduate Certificate of Information Technology, Graduate Diploma of Information Technology, or Master of Information Technology.

Graduate Diploma in Information Technology (GradDipInfTech)

Resolutions of the Senate

Eligibility for admission
1. The Dean of the Faculty of Science may admit to candidature:
   (1) graduates who have completed a bachelor's degree in any aspect of Information Technology; or
   (2) graduates who have completed a Bachelor of Engineering degree with a major sequence of study in Computer Engineering, Software Engineering or Telecommunications Engineering; or
   (3) persons who have completed the GradCertIT at the University of Sydney, with Credit average results or above.

Availability
2.
   (1) Admission to the Graduate Diploma in Information Technology may be limited by a quota.
   (2) In determining the quota the University will take into account:
      (a) availability of resources including space, laboratory and computing facilities; and
      (b) availability of adequate and appropriate supervision.
   (3) In considering an application for admission to candidature, the Head of the School of Information Technologies and the Dean shall select in preference applicants who are most meritorious in terms of Section 1 above.

Time limits
3. A candidate may proceed on either a full-time or a part-time basis. In determining the length of candidacy below, the Dean shall include time previously spent as candidate for the GradCertIT.
   (1) A full-time candidate shall complete the requirements for the award not earlier than the end of the second semester of candidature, and not later than the end of the third semester of candidature, unless otherwise determined by the Dean.
   (2) A part-time candidate shall complete the requirements of the award not earlier than the end of the third semester of candidature, and not later than the end of the sixth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty
See entry for the Master of Information Technology.

Graduate Diploma in Information Technology Management (GradDipITMan)

Resolutions of the Senate

Eligibility for admission
1. The Dean of the Faculty of Science may admit to candidature:
   (1) graduates who have completed a bachelor's degree; or
   (2) persons who have completed the GradCertlTMan at the University of Sydney, with Credit average results or above.

The bachelor's degree does not have to be an Information Technology degree, but it should contain a significant amount of technical subjects related to computing, as typically found in an IT, Science, or Engineering degree. Applicants holding a bachelor's degree in other areas, such as Finance, Commerce, Health Sciences, and Social Sciences, who have completed relevant IT subjects will also be eligible. Applicants holding a bachelor's degree in any discipline and who have worked in Information Technology for more than five years are eligible.

Availability
2.
   (1) Admission to the Graduate Diploma in Information Technology Management may be limited by a quota.
   (2) In determining the quota the University will take into account:
      (a) availability of resources including space, laboratory and computing facilities; and
      (b) availability of adequate and appropriate supervision.
   (3) In considering an application for admission to candidature, the Head of the School of Information Technologies and the Dean shall select, in preference, applicants who are most meritorious in terms of Section 1 above.

Time limits
3. A candidate may proceed on either a full-time or a part-time basis.
   (1) A full-time candidate shall complete the requirements for the award not earlier than the end of the second semester of candidature, and not later than the end of the third semester of candidature, unless otherwise determined by the Dean.
   (2) A part-time candidate shall complete the requirements of the award not earlier than the end of the third semester of candidature, and not later than the end of the sixth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty
See entry for the Master of Information Technology Management.

Graduate Diploma in Applied Information Technology (GradDipApplIT)

Note: This degree is no longer available to new students from 2005.

Resolutions of the Senate

Eligibility for admission
1. The Dean of the Faculty of Science may admit to candidature:
   (1) graduates who have completed a bachelor's degree in Physical Science or Engineering, or a bachelor's degree with some background in Information Technology or Mathematics; or
   (2) persons who have completed the GradCertApplIT at the University of Sydney, with Credit average results or above.

Availability
2.
   (1) Admission to the Graduate Diploma in Applied Information Technology may be limited by a quota.
   (2) In determining the quota, the University will take into account:
      (a) availability of resources including space, laboratory and computing facilities; and
      (b) availability of adequate and appropriate supervision.
   (3) In considering an application for admission to candidature, the Head of the School of Information Technologies and the Dean shall select, in preference, applicants who are most meritorious in terms of Section 1 above.

Time limits
3. A candidate may proceed on either a full-time or a part-time basis. In determining the length of candidacy below, the Dean shall include time previously spent as a candidate for the GradCertApplIT course.
   (1) A full-time candidate shall complete the requirements for the award not earlier than the end of the second semester of candidature, and not later than the end of the fourth semester of candidature, unless otherwise determined by the Dean.
   (2) A part-time candidate shall complete the requirements of the award not earlier than the end of the fourth semester of candidature, and not later than the end of the eighth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty

See entry for the Master of Applied Information Technology.

Graduate Diploma in Psychology (GradDipPsych)

Resolutions of the Senate

Eligibility for admission

1. The Faculty of Science may admit to candidature applicants who hold the degree of Bachelor of Science, Bachelor of Arts, Bachelor of Economics (Social Science), or Bachelor of Liberal Studies for the University of Sydney or and equivalent degree as deemed by the Faculty, who have not previously completed a major in Psychology. When assessing an applicant, both undergraduate record and UAI (Or equivalent) may be taken into account.

2. Applicants must have already successfully completed 12 credit points of Junior Psychology (currently PSYC 1001 and 1002) or equivalent within the last 10 years, except that an applicant who has completed 6 credit points of Junior Psychology at the University of Sydney in the previous 12 months with a grade of Distinction or better, shall be considered for admission.

3. Conditions of candidature are prescribed by Resolutions of the Faculty.

Resolutions of the Faculty

Requirements for the course

1. A unit of study shall consist of lectures together with such tutorial instructions, essays, exercises or practical work as may be prescribed. In these resolutions, to "complete a unit of study" and derivative expressions shall mean:

(i) to attend lectures and the meetings, if any, for tutorial instruction;

(ii) to complete satisfactorily the essays, exercises and the practical work, if any; and

(iii) to pass the examination on the unit of study.

2. A candidate shall complete coursework to the value of 48 credit points comprising 24 credit points of Intermediate units of study in Psychology and 24 credit points of Senior units of study in Psychology which must, except with Departmental approval, include PSYC (3201 or 3010) and (PSYC 3202 or HPSC 3023) (subject to Academic Board approval). The prerequisites and progression requirements for these units of study as set out in Table I for the BSc must be met.

Time limits

3. A candidate for the GradDipPsych shall normally proceed as a part-time student for at least four semesters.

Examination

4. A candidate may be tested by written and oral examinations, assignments, exercises and practical work or any combination of these.

5. On completion of the requirements for each unit of study comprising the GradDipPsych the results of the examination of the coursework and participation in the seminar series for that unit of study shall be reported by the Department of Psychology to the Faculty which shall determine the result of the candidature.

Progress

6. Satisfactory progress shall be as determined by the Faculty.

7. The Faculty may call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards completion of the GradDipPsych and where, in the opinion of the Faculty, the candidate does not show good cause, terminate the candidature.

Exemption

8. Students may apply for exemption (up to 24 credit points) for unit(s) of study where they have already completed studies which the Faculty deems equivalent to unit(s) in the GradDipPsych. Such units of study must have been completed within the previous ten years.

Graduate certificates

Graduate Certificate in Science (History and Philosophy of Science)

Resolutions of the Senate

Eligibility for admission

1.

(1) The Dean of the Faculty of Science, on the recommendation of the appropriate committee may admit to candidature for the Graduate Certificate in Science (History and Philosophy of Science) an applicant who is:

(a) the holder of the of the degree of Bachelor of Science or Bachelor of Medical Science or Bachelor of Arts or Bachelor of Liberal Studies, or any other award of the University of Sydney; or

(b) a graduate of another university or other appropriate institution who has qualifications equivalent to those specified in subsection (a).

Time limits

2. A candidate shall proceed as a full time student for a period of one semester or as a part time student for up to three semesters.

Requirements

3. The requirements for the graduate certificate shall be as prescribed by the Resolution of the Faculty.

Resolutions of the Faculty

1. A unit of study shall consist of seminars together with such essays, exercises or practical work as may be prescribed. In these resolutions, to ‘complete a unit of study’ and derivative expressions shall mean:

(i) to attend seminars and other meetings as recommended; and

(ii) to complete satisfactorily any practical and theoretical assignments.

2. A candidate shall complete course work to the value of 24 credit points selected from the following table and including HPSC 4108 (if they have not completed a major in History and Philosophy of Science, or equivalent program of study, at another institution).

Unit of study		Credit points
HPSC 4108	Core Topics: History & Philosophy of Sci	6
HPSC 4101	Philosophy of Science	6
HPSC 4102	History of Science	6
HPSC 4103	Sociology of Science	6
HPSC 4104	Recent Topics in HPS	6
HPSC 4105	HPS Research Methods	6

Graduate Certificate in Information Technology (GradCertlnfTech)

Resolutions of the Senate

Eligibility for admission

1. The Dean of the Faculty of Science may admit to candidature:

(1) graduates who have completed a Bachelor's degree, with a substantial study of a relevant field of Information Technology; or

(2) graduates who have completed a Bachelor of Engineering degree with a major sequence of study in Computer Engineering, Software Engineering or Telecommunications Engineering; or

(3) persons who offer evidence of recognised prior learning which is considered to demonstrate the knowledge and aptitude required to undertake the units of study.

Availability

2.

(1) Admission to the Graduate Certificate in Information Technology may be limited by a quota.

(2) In determining the quota the University will take into account:

(a) availability of resources including space, laboratory and computing facilities; and

(b) availability of adequate and appropriate supervision.
(3) In considering an application for admission to candidature, the head of the School of Information Technologies and the Dean shall select in preference applicants who are most meritorious in terms of section 1 above.

Time limits

4. A candidate may proceed on either a full-time or a part-time basis.
(1) A full-time candidate shall complete the requirements for the award not earlier than the end of the first semester of candidature, and not later than the end of the second semester of candidature, unless otherwise determined by the Dean.
(2) A part-time candidate shall complete the requirements of the award not earlier than the end of the second semester of candidature, and not later than the end of the fifth semester of candidature, unless otherwise determined by the Dean.

Progress

5. The Dean may:
(a) call upon any candidate to show cause why that candidature should not be terminated by reason of unsatisfactory progress towards the completion of the requirements for the Graduate Certificate; and
(b) terminate the candidature where the candidate does not show good cause.

Resolutions of the Faculty

See entry for the Master of Information Technology.

Graduate Certificate in Information Technology Management (GradCertlTMan)

Resolutions of the Senate

Eligibility for admission.

1. The Dean of the Faculty of Science may admit to candidature:
(1) graduates who have completed a Bachelor's degree; or
(2) persons who are able to offer evidence of recognised prior learning which is considered to demonstrate the knowledge and aptitude required to undertake this course.

The Bachelor's degree does not have to be an Information Technology degree, but it should contain a significant amount of technical subjects related to computing, as typically found in an IT, Science, or Engineering degree. Applicants holding a Bachelor's degree in other areas, such as Finance, Commerce, Health Sciences, and Social Sciences, who have completed relevant IT subjects will also be eligible. Applicants holding a Bachelor's degree in any discipline and who have worked in Information Technology for more than 5 years are eligible

Availability

2.
(1) Admission to the Graduate Certificate in Information Technology Management may be limited by a quota.
(2) In determining the quota the University will take into account:
(a) availability of resources including space, laboratory and computing facilities; and
(b) availability of adequate and appropriate supervision.
(3) In considering an application for admission to candidature, the Head of the School of Information Technologies and the Dean shall select, in preference, applicants who are most meritorious in terms of section 1 above.

Time limits

3.A candidate may proceed on either a full-time or a part-time basis.
(1) A full-time candidate shall complete the requirements for the award not earlier than the end of the first semester of candidature, and not later than the end of the second semester of candidature, unless otherwise determined by the Dean.
(2) A part-time candidate shall complete the requirements of the award not earlier than the end of the second semester of candidature, and not later than the end of the fourth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty

See entry for the Master of Information Technology Management

Graduate Certificate in Applied Information Technology (GradCertApplIT)

Note: This degree is no longer available to new students from 2005.

Resolutions of the Senate

Eligibility for admission

1. The Dean of the Faculty of Science may admit to candidature:
(1) graduates who have completed a Bachelor's degree in Physical Science or Engineering, or a Bachelor's degree with some background in Information Technology or Mathematics; or
(2) persons who have worked in the area of Information Technology for more than eight years and can offer evidence of recognized prior learning which is considered to demonstrate the knowledge and aptitude required to undertake the units of study.

Availability

2.
(1) Admission to the Graduate Certificate in Applied Information Technology may be limited by a quota.
(2) In determining the quota, the University will take into account:
(a) availability of resources including space, laboratory and computing facilities; and
(b) availability of adequate and appropriate supervision.
(3) In considering an application for admission to candidature, the Head of the School of Information Technologies and the Dean shall select, in preference, applicants who are most meritorious in terms of section 1 above.

Time limits

3. A candidate may proceed on either a full-time or a part-time basis.
(1) A full-time candidate shall complete the requirements for the award not earlier than the end of the second semester of candidature, and not later than the end of the third semester of candidature, unless otherwise determined by the Dean.
(2) A part-time candidate shall complete the requirements of the award not earlier than the end of the third semester of candidature, and not later than the end of the sixth semester of candidature, unless otherwise determined by the Dean.

Resolutions of the Faculty

See entry for the Master of Applied Information Technology.

Applied Science

Graduate Certificate in Applied Science (GradCertApplSc)

Graduate Diploma in Applied Science (GradDipApplSci)

Master of Applied Science (MApplSc)

Resolutions of the Senate

1. The Graduate Certificate in Applied Science, the Graduate Diploma in Applied Science, and the Master of Applied Science will be offered in subject areas as determined by the Faculty of Science. Subject to Faculty approval, candidates may choose to take units of study over a number of different subject areas offered by the Faculty of Science, or they may choose to specialise in one of the areas listed below, in which case the testamur shall specify the subject area. These awards shall also be offered in the following subject areas, and in these cases the testamur for the award shall specify the subject area:

Bioinformatics
Coastal Management
Environmental Science
Microscopy & Microanalysis
Molecular Biotechnology
Neuro science
Nutrition and Dietetics
Psychology of Coaching
Spatial Information Science (Graduate Certificate only)
Wildlife Health and Population Management

Eligibility for admission

2.
(1) The Dean of the Faculty of Science may admit to candidature for:

(i) the Graduate Certificate in Applied Science:
(a) graduates of The University of Sydney holding the degree of Bachelor of Science or any other equivalent award of the University of Sydney;
(b) graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection (a); or
(c) persons who have experience which is considered to demonstrate the knowledge and aptitude required to undertake the units of study;
(ii) the Graduate Diploma in Applied Science:
(a) graduates of The University of Sydney holding the degree of Bachelor of Science or any other equivalent award of The University of Sydney;
(b) graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection (a); or
(c) persons who have completed requirements for the Graduate Certificate in Applied Science, or equivalent;
(iii) the Master of Applied Science:
(a) graduates of The University of Sydney holding the degree of Bachelor of Science or any other equivalent award of The University of Sydney;
(b) graduates of other universities or other appropriate institutions who have qualifications equivalent to those specified in subsection (a); or
(c) persons who have completed requirements for the Graduate Diploma in Applied Science, or equivalent.

(2) In relation to particular subject areas the Dean may require applicants to satisfy additional specific requirements relating to that subject area.

Availability

3.

(1) Admission to candidature may be limited by a quota. In determining the quota, the University will take into account:
(i) availability of resources including space, laboratory and computing facilities; and
(ii) availability of adequate and appropriate supervision.

(2) In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 2 above.

Method of progression

4.

(1) A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.

(2) A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises, practical work, or project work as may be prescribed. In these resolutions, ‘to complete a unit of study’ or any derivative expression means:
(i) to attend the lectures and the meetings, if any, for seminars or tutorial instruction;
(ii) to complete satisfactorily the essays, exercises, practical and project work if any; and
(iii) to pass any other examination of the unit of study that may apply.

Availability of unit of study

5. All units of study for a particular subject area may not be available every semester. The Dean may allow substitution of any unit of study by another unit of study, including units of study from other postgraduate coursework programs in the Faculty or elsewhere in the University.

Time limits

6. A candidate may proceed on either a full-time or a part-time basis.

7.

(1) A candidate for the Graduate Certificate in Applied Science shall complete the requirements for the award in a minimum of one semester and a maximum of four semesters, and except with permission of the Dean within three calendar years of admission to candidature.

(2) A candidate for the Graduate Diploma in Applied Science shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters, and except with permission of the Dean within six calendar years of admission to candidature.

(3) A candidate for the Master of Applied Science shall complete the requirements for the award in a minimum of two semesters and a maximum of twelve semesters, and except with permission of the Dean within nine calendar years of admission to candidature.

Requirements for the course

8.

(1) Candidates for the Graduate Certificate in Applied Science are required to complete satisfactorily units of study granting a minimum of 24 credit points selected from units of study approved from time to time by the Faculty.

(2) Candidates for the Graduate Diploma in Applied Science are required to complete satisfactorily units of study granting a minimum of 36 credit points selected from units of study approved from time to time by the Faculty.

(3) Candidates for the Master of Applied Science are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from units of study approved from time to time by the Faculty.

9. Candidates for the Master of Applied Science can enrol in 12-credit point project units of study only after successful completion of at least 24 credit points of study.

Examination

10. On completion of the requirements for the course, the Faculty shall determine the results of the candidature.

Progress

11.

(1) The Dean may:
(i) advise a student when their performance has been such that a rule would normally be applied and call upon that student to show good cause why the rule should not be applied; and
(ii) where the student does not show good cause, apply the rule.

(2) Candidates for the Master of Applied Science, the Graduate Diploma in Applied Science, and the Graduate Certificate in Applied Science, shall be governed by the rules as follows:
(i) A student who has failed a cumulative total of 12cp at any stage of enrolment in the Master of Applied Science will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Applied Science;
(ii) A student who has failed a cumulative total of 18cp at any stage of enrolment in the Master of Applied Science and/or the Graduate Diploma in Applied Science will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Applied Science;
(iii) A student who has failed a cumulative total of more than 18cp in the Master of Applied Science and/or the Graduate Diploma in Applied Science and/or the Graduate Certificate in Applied Science will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.
(iv) A student who has failed a core unit at the second attempt in the Master of Applied Science and/or the Graduate Diploma in Applied Science and/or the Graduate Certificate in Applied Science will be deemed to have failed to complete course requirements and will be required to show good cause why he or she should be allowed to re-enrol. If good cause has not been established, the student will not be permitted to re-enrol.

Credit

12.

(1) Credit is not available in the Graduate Certificate in Applied Science, Graduate Diploma in Applied Science and Master of Applied Science for postgraduate study which has not been undertaken in these award courses within the previous three years, except at the discretion of the Dean.

(2) A candidate who has qualified for the award of the Graduate Certificate in Applied Science may transfer, within three years, to the Graduate Diploma in Applied Science and receive credit for up to 24 credit points from the Graduate Certificate in Applied Science.

(3) A candidate who has qualified for the award of the Graduate Diploma in Applied Science may transfer, within three years, to the Master of Applied Science and receive credit for up to

36 credit points from the Graduate Diploma in Applied Science

(4) A candidate who has completed units of study in the Applied Science program within the previous three years, but has not qualified for an award, may transfer to another award within the same Applied Science program and receive credit for the units of study completed.

Resolutions of the Faculty

Graduate Certificate in Applied Science (Bioinformatics) (GradCertApplSc(Bioinf))

Graduate Diploma in Applied Science (Bioinformatics) (GradDipApplSc(Bioinf))

Master of Applied Science (Bioinformatics) (MApplSc(Bioinf))

Requirements for the degree

1.

(1) Candidates for the Graduate Certificate in Applied Science (Bioinformatics) are required to complete satisfactorily four core units of study (BIOL 5001, BIOL 5002, MOBT 5201, STAT 5001) (Stream A) or four core units of study (BIOL 5002, MOBT 5201, STAT 5001, COMP 5213) (Stream B).

(2) Candidates for the Graduate Diploma in Applied Science (Bioinformatics) are required to complete satisfactorily four core units of study (BIOL 5001, BIOL 5002, MOBT 5201, STAT 5001) and 12 credit points from optional units of study (Stream A) or five core units of study (BIOL 5002, MOBT 5201, STAT 5001, COMP 5213, COMP 5214) and 6 credit points from optional units of study (Stream B).

(3) Candidates for the Master of Applied Science (Bioinformatics) are required to complete satisfactorily four core units of study (BIOL 5001, BIOL 5002, MOBT 5201, STAT 5001) and 24 credit points from optional units of study (Stream A) or five core units of study (BIOL 5002, MOBT 5201, STAT 5001, COMP 5213, COMP 5214) and 18 credit points from optional units of study.

Graduate Certificate in Applied Science (Coastal Management) (GradCertApplSc(Coastal Mgt))

Graduate Diploma in Applied Science (Coastal Management) (GradDiplApplSc(Coastal Mgt))

Master of Applied Science (Coastal Management) (MApplSc(Coastal Mgt))

Requirements for the degree

1.

(1) Candidates for the Graduate Certificate in Applied Science (Coastal Management) are required to complete satisfactorily at least two core units of study (MARS 5001, MARS 5002, MARS 5003, GEOG 5001) and 12 credit points from the following optional units of study: MARS 5001, MARS 5002, MARS 5003, GEOG 5001, CHEM 5001, ENVI 5705, ENVI 5803, ENVI 5808, ENVI 5809.

(2) Candidates for the Graduate Diploma in Applied Science (Coastal Management) are required to complete satisfactorily four core units of study (MARS 5001, MARS 5002, MARS 5003, GEOG 5001) and 12 credit points from the following optional units of study: MARS 5004, CHEM 5001, ENVI 5705, ENVI 5803, ENVI 5808, ENVI 5809.

(3) Candidates for the Master of Applied Science (Coastal Management) are required to complete satisfactorily four core units of study (MARS 5001, MARS 5002, MARS 5003, GEOG 5001) and 24 credit points from the following optional units of study: MARS 5004, MARS 5005, CHEM 5001, ENVI 5705, ENVI 5803, ENVI 5808, ENVI 5809.

Graduate Certificate in Applied Science (Environmental Science) (GradCertApplSc(EnvSc))

Graduate Diploma in Applied Science (Environmental Science) (GradDipApplSc(EnvSc))

Master of Applied Science (Environmental Science) (MApplSc(EnvSc))

Requirements for the degree

1.

(1) Candidates for the Graduate Certificate in Applied Science (Environmental Science) are required to satisfactorily complete 36 credit points of units of study including one of two core units of study (ENVI 5708 or 5808) and 18 credit points from the optional units of study.

(2) Candidates for the Graduate Diploma in Applied Science (Environmental Science) are required to satisfactorily complete three core units of study (ENVI 5705 and ENVI 5808 and either ENVI 5708 or ENVI 5904), and 18 credit points from optional units of study.

(3) Candidates for the Master of Applied Science (Environmental Science) are required to satisfactorily complete three core units of study (ENVI 5705 and ENVI 5808 and either ENVI 5708 or ENVI 5904), and 30 credit points from optional units of study.

Graduate Certificate in Applied Science (Microscopy and Microanalysis) (GradCertAppSc (Microsc & Microanal))

Graduate Diploma in Applied Science (Microscopy and Microanalysis) (GradDipApplSc (Microsc & Microanal))

Master of Applied Science (Microscopy and Microanalysis) (MApplSc (Microsc & Microanal))

Requirements for the degree

1.

(1) Candidates for the Graduate Certificate in Applied Science (Microscopy & Microanalysis) are required to complete satisfactorily 12 credit points from core units of study and 12 credit points from optional units of study.

(2) Candidates for the Graduate Diploma in Applied Science (Microscopy & Microanalysis) are required to complete satisfactorily 12 credit points from core units of study and a further 24 credit points from optional units of study.

(3) Candidates for the Master of Applied Science (Microscopy & Microanalysis) are required to complete satisfactorily 12 credit points from core units of study and a further 24 credit points from optional units of study, and an independent research project and report.

Graduate Certificate in Applied Science (Molecular Biotechnology) (GradCertApplSc(MBT))

Graduate Diploma in Applied Science (Molecular Biotechnology) (GradDipApplSc(MBT))

Master of Applied Science (Molecular Biotechnology) (MApplSc(MBT))

Requirements for the degree

1.

(1) Candidates for the Graduate Certificate in Applied Science (Molecular Biotechnology) are required to complete satisfactorily two core units of study (MOBT 5101 and MOBT 5102).

(2) Candidates for the Graduate Diploma in Applied Science (Molecular Biotechnology) are required to complete satisfactorily two core units of study (MOBT 5101 and MOBT 5102) and 12 credit points from optional units of study.

(3) Candidates for the Master of Applied Science (Molecular Biotechnology) are required to complete satisfactorily four core units of study (MOBT 5101, MOBT 5102, MOBT 5203 and MOBT 5303) and 12 credit points from optional units of study.

Graduate Certificate in Applied Science (Molecular Biotechnology) (GradCertApplSc(MBT))
Graduate Diploma in Applied Science (Molecular Biotechnology) (GradDipApplSc(MBT))
Master of Applied Science (Molecular Biotechnology) (MApplSc(MBT))
Requirements for the degree
1.
(1) Candidates for the Graduate Certificate in Applied Science (Molecular Biotechnology) are required to complete satisfactorily two core units of study (MOBT 5101 and MOBT 5102).
(2) Candidates for the Graduate Diploma in Applied Science (Molecular Biotechnology) are required to complete satisfactorily two core units of study (MOBT 5101 and MOBT 5102) and 12 credit points from optional units of study.
(3) Candidates for the Master of Applied Science (Molecular Biotechnology) are required to complete satisfactorily four core units of study (MOBT 5101, MOBT 5102, MOBT 5203 and MOBT 5303) and 12 credit points from optional units of study.

Graduate Certificate in Applied Science (Molecular Biotechnology) (GradCertApplSc(MBT))
Graduate Diploma in Applied Science (Molecular Biotechnology) (GradDipApplSc(MBT))
Master of Applied Science (Molecular Biotechnology) (MApplSc(MBT))
Requirements for the degree
1.
(1) Candidates for the Graduate Certificate in Applied Science (Molecular Biotechnology) are required to complete satisfactorily two core units of study (MOBT 5101 and MOBT 5102).
(2) Candidates for the Graduate Diploma in Applied Science (Molecular Biotechnology) are required to complete satisfactorily two core units of study (MOBT 5101 and MOBT 5102) and 12 credit points from optional units of study.
(3) Candidates for the Master of Applied Science (Molecular Biotechnology) are required to complete satisfactorily four core units of study (MOBT 5101, MOBT 5102, MOBT 5203 and MOBT 5303) and 12 credit points from optional units of study.

Graduate Certificate in Applied Science (Neuroscience) (GradCertApplSc(NeuroSc))
Graduate Diploma in Applied Science (Neuroscience) (GradDipApplSc(NeuroSc))
Master of Applied Science (Neuroscience) (MApplSc(NeuroSc))
Requirements for the degree
1.
(1) Candidates for the Graduate Certificate in Applied Science (Neuroscience) are required to complete satisfactorily four units of study selected from NEUR 5101, NEUR 5102, NEUR 5103, NEUR 5104, NEUR 5105, NEUR 5106, NEUR 5107 or NEUR 5108.
(2) Candidates for the Graduate Diploma in Applied Science (Neuroscience) are required to complete satisfactorily five units of study selected from NEUR 5101, NEUR 5102, NEUR 5103, NEUR 5104, NEUR 5105, NEUR 5106, NEUR 5107 or NEUR 5108 and either NEUR 5001 or NEUR 5002.
(3) Candidates for the Master of Applied Science (Neuroscience) are required to complete satisfactorily five units of study selected from NEUR 5101, NEUR 5102, NEUR 5103, NEUR 5104, NEUR 5105, NEUR 5106, NEUR 5107 or NEUR 5108 and three units of study selected from NEUR 5001, NEUR 5002, NEUR 5003, NEUR 5004.

Graduate Certificate in Applied Science (Nutrition and Dietetics) (GradCertApplSc(NutrDiet))
Graduate Diploma in Applied Science (Nutrition and Dietetics) (GradDipApplSc(NutrDiet))
Master of Applied Science (Nutrition and Dietetics) (MApplSc(NutrDiet))
This award course is not available to new students from 2006
Eligibility for admission
1. An applicant for admission will satisfy the admission requirements for the Graduate Diploma in Applied Science and:
(1) should be eligible for FULL membership of the Dietitians Association of Australia; and
(2) have at least 3 years experience as a professional dietitian.
Requirements for the degree
2.
(1) Candidates for the Graduate Certificate in Applied Science (Nutrition and Dietetics) are required to satisfactorily complete two core units of study (NTDT6001 and NTDT6011) and 12 credit points from optional units of study.
(2) Candidates for the Graduate Diploma in Applied Science (Nutrition and Dietetics) are required to satisfactorily complete two core units of study (NTDT6001 and NTDT6011) and 24 credit points from optional units of study.
(3) Candidates for the Masters of Applied Science (Nutrition and Dietetics) are required to satisfactorily complete two core units of study (NTDT 6001 and NTDT 6011), and 36 credit points from optional units of study.

Graduate Certificate in Applied Science (Psychology of Coaching) (GradCertApplSc(PsychCoach))
Graduate Diploma in Applied Science (Psychology of Coaching) (GradDipAppSc (PsychCoach))
Master of Applied Science(Psychology of Coaching) (MApplSc(PsychCoach))
Eligibility for admission
1. An applicant for admission will satisfy the admission requirements for the Graduate Certificate in Applied Science or the Graduate Diploma in Applied Science or the Master of Applied Science and:
(1) have a minimum 3 year sequence in Psychology; and
(2) relevant work experience. Relevant work experience may include counselling, experience in organisational learning and development, management experience, employment in applied psychology settings, professional coaching or other areas directly related to coaching.
Requirements for the degree
2.
(1) Candidates for the Graduate Certificate in Applied Science (Psychology of Coaching) are required to satisfactorily complete three core units of study PSYC 4721, PSYC 4722 and PSYC 4724 and 6 credit points from elective units.
(2) Candidates for the Graduate Diploma in Applied Science (Psychology of Coaching) are required to satisfactorily complete three core units of study PSYC 4721, PSYC 4722 and PSYC 4724 and 18 credit points from elective units.
(3) Candidates for the Master of Applied Science (Psychology of Coaching) are required to complete satisfactorily three core units of study PSYC 4721, PSYC 4722 and PSYC 4724 and a further 30 credit points from elective units of study.

Graduate Certificate in Applied Science (Spatial Information Science) (GradCertApplSc (SIS))
Requirements for the degree
1.(1) Candidates for the Graduate Certificate in Applied Science (Spatial Information Science) are required to complete satisfactorily two core units of study (GEOG 5001 and GEOG5002) and 12 credit points from optional units of study.

Graduate Certificate in Applied Science (Wildlife Health and Population Management) (GradCertApplSc(WildHlthPopMan))
Graduate Diploma in Applied Science (Wildlife Health and Population Management) (GradDipApplSc(WildHlthPopMan))
Master of Applied Science (Wildlife Health and Population Management) (MApplSc(WildHlthPopMan))
Requirements for the degree
1.
(1) Candidates for the Graduate Certificate in Applied Science (Wildlife Health and Population Management) are required to complete satisfactorily two core units of study (WILD 5001 and WILD 5002) and 12 credit points from optional units of study.
(2) Candidates for the Graduate Diploma in Applied Science (Wildlife Health and Population Management) are required to complete satisfactorily two core units of study (WILD 5001 and WILD 5002) and 24 credit points from optional units of study.
(3) Candidates for the Master of Applied Science (Wildlife Health and Population Management) are required to complete satisfactorily three core units of study (WILD 5001, WILD 5002 and WILD 5009) and 24 credit points from optional units of study.

Bioethics

Graduate Certificate in Bioethics (GradCertBEth)
Graduate Certificate in Bioethics (Biotechnology) (GradCertBEthBTech)
Graduate Diploma in Bioethics (GradDipBEth)
Master of Bioethics (MBEth)
Master of Bioethics (Honours) (MBEthHon)

Resolutions of the senate
Eligibility for Admission
1. The Dean of the Faculty of Science, on the recommendation of the appropriate committee, may admit to candidature for:
(i) the GradCertBEth, GradCertBEthBTech, GradDipBEth, and MBEth
an applicant who is the holder of the degree of Honours or any equivalent award in science, medicine, nursing, allied health sciences, philosophy/ethics, sociology/anthropology, history, law, or other relevant field;
(ii) the MBEthHon
an applicant who has completed at least 4 units of study in the University's Postgraduate Program in Bioethics and who holds at least a distinction average for units of study taken in the University's Postgraduate Program in Bioethics.
Availability
2.
(1) Admission to candidature may be limited by quota. In determining the quota, the University will take into account:
(i) availability of resources including space and computing facilities; and
(ii) availability of adequate and appropriate supervision.
(2) In considering an application for admission to candidature the Dean shall take account of the quota and will select, in preference, applicants who are most meritorious in terms of section 1 above.
Method of progression
3.
(1) A candidate for the course shall proceed by completing units of study as prescribed by the Faculty.
(2) A unit of study shall consist of such lectures, seminars, essays, exercises, practical work, or project work as may be prescribed. In these resolutions, "to complete a unit of study"; or any derivative expression means:
(i) to attend the lectures and the meetings, if any, for seminars or other instruction;
(ii) to complete satisfactorily the essays, exercises, practical and project work if any; and
(iii) to pass any other examination of the unit of study that may apply.
Time limits
4. A candidate may proceed on either a full-time or a part-time basis.
5.
(1) A candidate for the GradCertBEth shall complete the requirements for the award in a minimum of one semester and a maximum of five semesters, and except with permission of the Dean (in the event of suspension) within three calendar years of admission to candidature.
(2) A candidate for the GradCertBEthBTech shall complete the requirements for the award in a minimum of two semesters and a maximum of five semesters, and except with permission of the Dean (in the event of suspension) within three calendar years of admission to candidature.
(3) A candidate for the GradDipBEth shall complete the requirements for the award in a minimum of two semesters and a maximum of eight semesters, and except with permission of the Dean (in the event of suspension) within five calendar years of admission to candidature.
(4) A candidate for the MBEth shall complete the requirements for the award in a minimum of two semesters and a maximum of 10 semesters, and except with permission of the Dean (in the event of suspension) within six calendar years of admission to candidature.
(5) A candidate for the MBEthHon shall complete the requirements for the award in a minimum of three semesters and a maximum of 12 semesters, and except with permission of the Dean (in the event of suspension) within 7 calendar years of admission to candidature.
Requirements for the courses
6.
(1) Candidates for the GradCertBEth are required to complete satisfactorily units of study granting a minimum of 24 credit points selected from units of study approved from time to time by the Faculty. They must complete the Core unit and three Foundational units of study.
(2) Candidate for the GradCertBEthBTech are required to complete satisfactorily units of study granting a minimum of 24 credit points selected from units of study approved from time to time by the Faculty. They must complete the Core unit, one Foundational unit, BETH 5201, and BETH 5202.
(3) Candidates for the GradDipBEth are required to complete satisfactorily units of study granting a minimum of 36 credit points selected from units of study approved from time to time by the Faculty. They must complete the Core unit, three Foundational units, and 2 additional (Foundational or Elective) units of study.
(4) Candidates for the MBEth are required to complete satisfactorily units of study granting a minimum of 48 credit points selected from units of study approved from time to time by the Faculty. They must complete the Core unit, four Foundational units, and three Elective units of study.
(5) Candidates for the MBEthHon are required to complete satisfactorily units of study granting a minimum of 60 credit points selected from units of study approved from time to time by the Faculty. They must complete the Core unit, four Foundational units, three Elective units, and two Research Project units of study.
(6) Candidates (for all degrees) with appropriate background/experience may substitute (a maximum of two) other units of study for specifically required units upon approval of the course coordinator and Dean
(7) Candidates (for all degrees) with special aims/interests may be permitted to substitute one relevant non-BETH postgraduate unit of study (in History, Medical Humanities, or Law, for example) for specifically required units upon approval of the course coordinator and Dean.
(8) In no case shall a candidate (for any degree) be permitted to substitute more than two units of study in total.
Examination
7. On completion of the requirements for the course, the Faculty shall determine the results of the candidature.
Progress
8.
(1) Candidates shall be governed by the rules in 8(3), 8(4) and 8(5);
(2) The Dean may:

(a) advise a student when his or her performance has been such that a rule would normally be applied and call upon that student to show good cause why the rule should not be applied; and
(b) where the student does not show good cause, apply the rule.

(3) A student who has failed a cumulative total of 12cp at any stage of enrolment in the Master of Bioethics or Master of Bioethics (Honours) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Diploma in Bioethics;

(4) A student who has failed a cumulative total of 18cp at any stage of enrolment in the Master of Bioethics and/or Master of Bioethics (Honours) and/or the Graduate Diploma in Bioethics will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student's enrolment will be transferred to the Graduate Certificate in Bioethics;

(5) A student who has failed a cumulative total of more than 18cp in the Master of Bioethics and/or Master of Bioethics (Honours) and/or the Graduate Diploma in Bioethics and/or the Graduate Certificate in Bioethics and/or the Graduate Certificate in Bioethics (Biotechnology) will be required to show good cause why he or she should be allowed to re-enrol and, if good cause has not been established, the student will not be permitted to re-enrol.

Credit

9.

(1) Credit is not available in the GradCertBEth, GradCertBEthBTech, GradDipBEth, MBEth and MBEthHon for postgraduate study which has not been undertaken at the University (either within the Postgraduate Program in Bioethics or through the University's Professional Master of Medicine Program) within the past 3 years, except at the discretion of the Dean.

(2) A candidate who has qualified for the award of GradCertBEth or GradCertBEthBTech may transfer, within three years, to the GradDipBEth and receive credit for up to 24 credit points from the GradCertBEth or GradCertBEthBTech.

(3) A candidate who has qualified for the award of GradCertBEth or GradCertBEthBTech may transfer, within three years, to the MBEth or MBEthHon and receive credit for up to 24 credit points from the GradCertBEth or GradCertBEthBTech. (To transfer to MBethHon the candidate must satisfy admission requirements in 1(h).)

(4) A candidate who has qualified for the award of GradDipBEth may transfer, within three years, to the MBEth or MBEthHon and receive credit for up to 36 credit points from the GradDipBEth. (To transfer to MBethHon the candidate must satisfy admission requirements in 1(h).)

(5) A candidate who has qualified for the award of MBEth may transfer, within three years, to the MBEthHon and receive credit for up to 48 credit points from the MBEth. (To transfer to MBethHon the candidate must satisfy admission requirements in l(ii).)

(6) A candidate who has completed Bioethics units of study offered through the Postgraduate Program in Bioethics (whether or not the student was enrolled in a Bioethics degree course) or through the University's Professional Master of Medicine Program within the previous three years, but has not qualified for a degree towards which these units have contributed may receive credit for the units of study completed.

8. Staff

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

Faculty of Science

Dean's Office

Dean
Professor David A Day, BSc PhD *Adel* DipTeach *AdelTeachColl*

Pro-Deans
Associate Professor Christopher B Gillies, MAgrSc *Qld* PhD *Aha*
Jenny Henderson, DipEd *Flin* MSc

Executive Director
Kim P Schwieters, BA *Well* MA

Faculty Finance Manager
Helen Kwan, BCom *NSW*

Executive Assistant
Christine Askew, TCertT

Administrative Assistant
Sutira Teh

Associate Deans
Associate Professor Margaret A Charles, BA PhD
Charles Collyer, BSc *Flin* PhD
Professor Martijn de Sterke, MEng *Delft* PhD *Roch*
Associate Professor Deirdre Dragovich, MA *Adel* PhD
Bing Bing Zhou, PhD *ANU* BSc *Nanjing*
Professor David Feng, ME SJTU MS PhD *UCLA*
Thomas CT Hubble, MAppSc *NSW MSc* DipEd PhD
Michael Glen Hughes, BSc PhD
Associate Professor Anthony F Masters, BSc *Melb* PhD *ANU*, FRACI CChem
Associate Professor Mary Peat, BSc *Birm* PhD *Brist*
Associate Professor Ian Spence, BSc PhD *Monash*
Charlotte Taylor, BSc *Dund* MHEd *NSW* PhD *Aberd*
Associate Professor Donald E Taylor, MSc *Monash* DPhil *Oxf*
Professor Neville Weber, MSc PhD

Faculty and Student Information Office

Faculty Manager
Shari Lee, BA *Sing* MA

Assistant Faculty Manager
Suzanne Winch

Postgraduate Manager
Cheryl Collins, BA

Postgraduate Student Adviser
Matthew Charet

Postgraduate Assistant
Nancy Ng, BSc(Hons) *Staffs*

Undergraduate Manager
Kath Farrell, BSc

Undergraduate Student Adviser
Christopher Weldon, BEnvSc *Newcastle (NSW)* PhD

Undergraduate Assistant
Tamara Grant, BA MA(Merit) CELTA

International Student Adviser
Melanie Duncan, BTeach *Woll*

Graduations Officer
Sam Carroll-Bell, BCom *Woll*

Computer Systems Officer
Anthony Butler, BA Me//?GradDipCompStud *Canberra*

Marketing and Communication unit

Manager, Marketing & International Relations
Jasmine Chambers

Marketing & Schools Liaison Officer
Cath Brown, BEcon

Marketing & Events Officer
Trixie Barretto, BSc DipITProfPrac *UTS*

Student Information Officer
Linda Kristian, MA(Journalism) *UTS* BA

Web Developer
Jayne Ion, BA *Guelph* GradCertIT *CSU*

Agricultural Chemistry and Soil Science

Professor and Dean, Faculty of Agriculture, Food & Natural Resources
Les Copeland, BSc PhD, FRACI CChem. Appointed 2001

Professor in Agricultural and Environmental Chemistry (Personal Chair)
Ivan R Kennedy, PhD DSc(Agric) *WAust*, FRACI CChem. Appointed 1996

Professor in Soil Science
Alexander B McBratney, DSc PhD *Aberd.* Appointed 1995

Senior Lecturers
Robert A Caldwell, MSc PhD, MRACI CChem
Stephen R Cattle, BScAgr PhD
Balwant Singh, BSc(Agr) MSc(SoilSc) *Hisar* PhD *WAust*

McCaughey Senior Lecturer in Hydrology and Catchment Management
R Willem Vervoort, MSc *Wageningen* PhD *Georgia*

Senior Research Fellow
Brett Whelan, BScAgr PhD

Postdoctoral Fellow
Rosalind Deaker, BSc MScAgr PhD, DipEd *Macq*

Senior Research Associates
Inakwu OA Odeh, BSc(Agric) *Ibadan* MSc *Ahmando Bello* PhD *Adel*

Research Associates
Damian Field, BSc PhD
Nanju Lee, BScAgr PhD
Budiman Minasny, BAgr *Sumatera Utara* MAgr PhD
Raphael Viscarra Rossell, BScAgr PhD
Shuo Wang, MScAgr PhD

Senior Technical Officers
Colin Bailey, BApplSc *NSWIT*
Kevin McLauchlan, BiolTechHCert *STC*

Technical Officer
Iona Gyorgy, BiolTechCert BSc(Biotech) *UTS*

Emeritus Professor
Neville Collis-George, BSc *Mane* PhD *Camb,* HonDScAgr FRS-Chem

Honorary Associates
Harold R Geering, MSc *Cornell*
Norman K Matheson, PhD *Edin* MSc
Rodney J Roughley, MScAgr PhD *Lond*

Anatomy and Histology

Bosch Professor of Histology and Embryology
Christopher R Murphy, BSc *Adel* PhD *Flin* DSc. Appointed 2003

Chair of Anatomy and Pain Management
Richard J Bandler, BA *Miami (Ohio)* PhD *Carnegie-Mellon* DSc

Personal Chair in Visual Neuroscience
Bogdan Dreher, MS PhD *Warsaw* DSc

Professors
Cristobal G dos Remedios, PhD DSc
Johnston W McAvoy, BSc *Belf PhD Flin.* Appointed 2001

Head of Department and Professor
William S Webster, BSc PhD *Lond*

Associate Professors
Maria Byrne, BSc *Galway* PhD *VicBC*
Tailoi Chan-Ling, MOpton PhD *NSW,* FAAO

Senior Lecturers
Robin Arnold, MSc
Vladimir J Balcar, BSc *Sheff PhD ANU*
Denise A Donlon, BA PhD *NE* BSc DipEd
Kevin A Keay, BSc *Leeds* PhD *Sheff*
Frank Lovicu, PhD
Margaret A Swan, PhD

Lecturers
Deborah Bryce, BSc *Newcastle (NSW)* MChiroprac *Macq*
Karen Cullen, PhD
Luke Henderson, PhD
Fiona Stewart, BSc *NE* MB BS

Associate Lecturers
Richard Ward, BMedSci MB BS *Monash*

Senior Research Fellows
Thomas Fitzgibbon, BSc *UBC* PhD

Research Fellows
Neil Nosworthy, PhD
Michael Slater, BSc *Macq* PhD

Postdoctoral Fellows
Susan Adams, PhD
Vlado Buljan, PhD
Toby Knight, BAgSc PhD *Adel*
Kyle Mervin, PhD
Claudia Monassi
Diana Oakes, BSc AtfWPhD

Professional Officer
Peter R Mills, DipMT AIMLS, AAIMLS

Senior Technical Officers
Darryl R Cameron
Clive H Jeffrey
Roland A Smith, DipPhoto *Syd Inst*

Technical Officers
Peiren Kent
Marcus Robinson
Michael White, BTC *SydTech*

Computer Systems Manager
Danny Yee, BSc(Hons)

Administrative Officers
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Lena Ting, DipPublAdmin *HK*
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Honorary Senior Research Associates
Julian A Barden, PhD *Macq*
Coral G Chamberlain, MSc PhD

Honorary Associates
[illegible]
Peter O Bishop, MB BS DSc MD, FRS FAA
William Burke, BSc PhD *Lond*
David Cameron, BA PhD *ANU*
Arthur V Everitt, PhD
Andrew Howe, BDS PhD, FRACDS
Robbert de Iongh, MSc PhD
Estelle Lazer, PhD
Ann Macintosh
Lynette A Moffat, PhD
Robert R Munro, MD BS, FRACS
Suzanne Ollerenshaw, PhD
John K Pollak, PhD
Cedric D Shorey, MSc PhD *NSW,* CGIA FCGI
Richard Wright, BA *Camb* MA

Biological Sciences

ARC Federation Fellows
Stephen Simpson, BSc *Qld* PhD *London.* Appointed 2005
Richard Shine, AM, BSc *ANU* PhD *UNE* DSc, FAA. Appointed 2006

Professor in Terrestrial Ecology (Personal Chair)
Christopher Dickman, BSc *Leeds* PhD *ANU.* Appointed 2004

Professor of Biology (Genetics)
Ronald Anthony Skurray, AUAPharm PhD DSc *Adel,* MASM FAIBiol. Appointed 1991

Professor in Experimental Ecology (Personal Chair)
Antony J Underwood, PhD DSc *Brist,* FAA FLS FIBiol FAIBiol CBiol. Appointed 1992

Associate Professors
Ross A Coleman, BSc *Plymouth Polytechnic* DipEd, PhD *S'ton*
Christopher B Gillies, MAgrSc *Qld* PhD *Alta*
Rosalind T Hinde, BSc PhD
Benjamin Oldroyd, BScAgr PhD
Robyn L Overall, BSc *NSW* PhD *ANU*
Michael B Thompson, BSc PhD *Adel*

Senior Lecturers
Neville Firth, BSc PhD *Monash*
Murray J Henwood, BSc *Well* PhD *ANU*
Dieter Hochuli, BSc *Monash* PhD *LaTrobe*
Lars Jermiin, Cand Scient *Aarhus* PhD *LaTrobe*
Bruce Lyon, BSc PhD *Monash*
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Jan Marc, BSc PhD *NSW*
Adele Pile, BA *Boston* MA PhD *College of William and Mary*
Charlotte Taylor, BSc *Dund* MHEd *NSW* PhD *Aberd*
Glenda Wardle, MSc *Auck* MS PhD *Chic*

Director of First Year Biology
Elizabeth May, BSc DipEd PhD *NSW*

Lecturers
Clare McArthur, BSc PhD *Monash*
Rosanne Quinnell, BSc PhD *ANU*

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Frank Seebacher, PhD *Qld* BSc
Murray Thomson, BSc *Macq* MSc AttWPhD *N'cle*

Lecturers (part-time)
Osu Lilje, BSc PhD
Kathryn Raphael, BA PhD *Macq*

Associate Lecturers (part-time)
Stephanie Seddon, PhD *JCU*
Ernestina Tentori, MSc *Mexico* PhD

QE2 Postdoctoral Research Fellow
Madeleine Beekman, MSc PhD *Amsterdam*

ARC Postdoctoral Research Fellows
Gregory Brown, MSc *Guelph* PhD *Carleton*
Min Chen, BSc *NE Normal* MSc *Liaoning Normal* PhD
John Gardiner, BSc PhD
Nathan Lo, BMedSc PhD
Benjamin Phillips, BSc *Qld* PhD
Rajkumar Radder, MSc PhD *Karnatak*

Postdoctoral Research Fellow
Jonathan Webb, PhD

Grant Funded Postdoctoral Staff
Melissa H Brown, BSc PhD *Adel*
Lawrence Cantrill, BSc PhD
Fiona Clissold, BSc PhD *Monash*
Stephen Kwong, BTech *Macq* PhD *UWS*
David Midgeley, BSc *Macq* PhD *UWS*
Graham Thompson, MSc *Ontario* PhD *LaTrobe*

Senior Laboratory Manager
Michael Joseph, BSc

Webmaster and Database Manager
George Barrett, HNC(ApplBiol) *UK*

Manager of Technical Development: Research and Teaching
Basil Panayotakos

Workshop Manager
Salvatore Ruggeri

Resources Officer
Mark Ahern, BSc

Senior Technical Officers
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Claudio Muhlrad, BiolTechCert *STC*
Malcolm Ricketts, BSc *Macq* PhotogCert *STC*
Heather Sowden, BiolTechCert *STC (part-time)*
Joanna Walker, BSc GradDipSci(EnvSc)

Manager, Educational Technology Support and Development
AidaYalcin, BSc MSc *Aegean Univ Turkey*

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Ralph Maddox, BiolTechCert *ArmTC*
Andrew Oulianoff

Technical Officers
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Xiumei Liang, BSc *Beijing*
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Hamlet Giragossyan

Caretaker Crommelin Biological Research Station
Colin McKenzie *(part-time)*

Administration Manager
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Suzan Ramsey

Science Communicator
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David Joseph Patterson, PhD *Brist* DSc *Queens*
John Alexander Thomson, MSc MAgrSc PhD *Melb*

Honorary Reader
Alan Meats, BSc *Durh* PhD *N'cle (UK),* FRES

Honorary Associate Professors
Patricia J Armati, MSc PhD, MAIBiol

Honorary Associates
William G Allaway, MA *Comb* PhD *Lanes*
Suzanne Bassett, MSc *Massey*
Daniel Bickel, BSc *Mich* PhD
Walter E Boles, BSc *Emporia State*
Ross A Bradstock, PhD
Gerry Cassis, PhD *Oregon*
Paula Cisternas, BSc PhD
Alan Clift, BScAgr PhD
Harold Cogger, PhD *Macq* DSc
Donald Colgan, BSc BEc *ANU* PhD *Melb*
Matthew Crowther, BSc MSWPhD
Graham Faichney, BScAgr PhD DAgrSc *Melb* MScAgr
Daniel Faith, BA *Chic* PhD *State Uni of New York*
Marianne Frommer, PhD
Allen E Greer, BA *Stan* PhD *Harv*
George Humphrey, LLB AttWBA PhD
Patricia A Hutchings, BSc *Lond* PhD DSc *N'cle(UK)*
Jeffrey M Leis, BSc *Arizona* PhD *Hawaii*
Francis L Lemckert, MSc
Ross Lilley, BSc *Adel* PhD *Flinders*
Valerie B Morris, BSc PhD *Edin*
Adam Munn, BSc PhD *NSW*
Christopher Murphy, BSc *Adel* PhD *Flin* DSc
Peter Myerscough, MA PhD *Oxf*
David O'Connor, BBus *Curtin* BSc PhD
Mats Olsson, BSc PhD *Goteborg*
John Palmer, MSc PhD *Sheff*
Kerryn Parry-Jones, DipEd *STC* MAppSc PhD *NSW BSc*
John R Paxton, BA MSc PhD *SCalif*
Winston Ponder, MSc PhD DSc *Auck*
Daniel Ramp, BSc *Melb*
Ray Ritchie, BSc PhD
Maurizio Rossetto, BSc *LaTrobe* MSc PhD *WA*
Gregory Rouse, MSc *Qld* PhD
John A Sved, BSc PhD *Adel*
Donelle Trautman, BSc PhD *Murdoch*
George Wilson, BA *Indiana* MSc *UCSD* PhD *La Jolla*

Visiting Scholars
Xavier Bonnet, BSc *Marseille* PhD *Lyon*
Jose Cuervo, BSc *Pamplona* PhD *Seville*
Frank Gleason, BSc *Trinity College, Hartford* PhD *UCLA*

William Hughes, BSc *Bangor* MSc *Lond* PhD *S'ton*
Rudolf Raff, BSc *Perm* PhD *Duke*
Elizabeth Raff, BS *Penn State* PhD *Duke*
Jeffery Villinski, BA *Minn* MS *Houston*

Chemistry

Professor of Chemistry (Organic Chemistry)
Maxwell J Crossley, BSc PhD *Melb,* FAA FRACI CChem. Appointed 1999

Professor in Chemistry (Polymer Chemistry)(Personal Chair)
Robert G Gilbert, PhD *ANU BSc,* FAA FRACI CChem. Appointed 1992

Professor in Chemistry (Inorganic Chemistry)(Personal Chair)
Peter A Lay, BSc *Melb* PhD *ANU,* FRACI CChem. Appointed 1997

Professor and Head of School
Trevor W Hambley, BSc *WAust* PhD *Adel,* FRACI CChem. Appointed 2002

Professor of Chemistry
Gregory G Warr, BSc PhD *Melb,* FRACI CChem

Associate Professors
James K Beattie, BA *Prin* MA *Camb* PhD *Northwestern,* FAAAS FRACI FRSC CChem
Peter R Harrowell, BSc PhD *Chic*
Scott H Kable, BSc PhD GnJDipBusAdmin *QIT*
Brendan J Kennedy, BEd *Melb* SC PhD *Monash*
Cameron J Kepert, BSc *UWA* PhD *Lond*
John C Mackie, PhD DSc, FRACI CChem
Anthony F Masters, BSc *Melb* PhD *ANU,* FRACI CChem

Director of First Year Studies
Adrian George, BSc PhD *R'dg,* MRSC MRACI CChem

Senior Lecturers
Robert W Baker, BSc PhD *WAust*
Ronald J Clarke, BSc PhD *Adel*
Meredith J T Jordan, BSc PhD
Malcolm D McLeod, BSc *Monash* PhD *Camb*
Louis M Rendina, BSc PhD *ANU*
Siegbert A Schmid, Dipl-Chem DrRerNat, *Tuebingen* Grad Dip HEd *NSW,* MRACI CChem

Lecturers
Rachel Codd, BSc PhD *James Cook*
Mark J Coster, BSc *Qld* PhD *Camb*
Christopher D Ling, BSc PhD *ANU*
Peter J Rutledge, MSc *Auck* DPhil *Oxf*
Timothy Schmidt, BSc PhD *Camb,* MRACI CChem
Matthew H Todd, MA PhD *Camb*

Federation Fellows
Thomas Maschmeyer, PhD
Cameron J Kepert, BSc *UWA* PhD *Lond*

ARC Australian Professorial Fellows
Phillip J Attard, BSc *NSW* PhD *ANU*
Peter A Lay, BSc *Melb* PhD *ANU,* FRACI CChem
Leo Radom, MSc PhD

ARC Senior Research Fellow
Jeffery R Reimers, BSc PhD *ANU,* MRACI CChem

ARC QEII Fellow
Katrina A Jolliffe, BSc PhD *NSW,* MRACI CChem

ARC Australian Postdoctoral Fellows
Rob Atkin, PhD *Newcastle (NSW)*
Angus Gray-Weale, BSc DPhil *Oxon*
Nigel Lucas, PhD *ANU*
Craig Marshall, PhD *UTS*
B Klaas Nauta, PhD *NCarolina*

Senior Research Fellow
Antony J Ward, PhD

Research Fellow
Hugh Harris, PhD *NSW*

Principal Research Fellow
Brian Hawkett, BSc PhD DipEd

Sesqui/University Postdoctoral Fellows
Toby Hudson, BSc DPhil *Oxon*
Damian Moran, MSc *Macq* PhD *Georgia*
Pall Thordarson, BSc PhD *Iceland*

Senior Research Associates
Antonio M Bonin, PhD
Aviva Levina, MSc PhD *Riga*
N Patrick J Stamford, MA *Camb* PhD *ANU*
Leon Van de Water, MSc *Utrecht* PhD *Leiden*

Research Associates
Iain M Blake, MChem *StAnd* DPhil *Oxf*
Annabelle C M Blom, PhD
Zhengli Cai, MSc PhD *Chinese AcadSci*
Janice Petherick, PhD *W.Syd.*
David Wong, BSc PhD *ANU*

Postdoctoral Fellows
Hank De Bruyn, PhD
Patrice Castignolles, PhD *Paris*
Alexander Djerdjev, PhD
Hongjuan Fang, MSc *Lanzhau* PhD *Chinese Ac.Sci.*
Marianne Gaborieau, PhD *Louis Pasteur*
Gregory J Haider, BSc *Otago*
Fatiah Issa, PhD
Nirmesh Jain, BSc MSc PhD *SGU*
Allen Larsen, PhD *Aarhus*
Siyabonga Mange, PhD *Stell*
David D N Nguyen, PhD *W.Syd.*
Alexis Perry, MSc *Glas* PhD *Leeds*
Thi Thuy Binh Pham, PhD MSc *Hanoi*
Aaron Reynolds, PhD
Anne Rich, PhD
Ewan Sprong, PhD *Stell*
Catherine P Whitby, BSc *UNSW* PhD *Melb*
Qingdi Zhou, PhD

Professional Officers
Elizabeth A Carter, BSc *Griff PhD QldUT*
Tuan La, BE *NSW* (Electronics)
Ian Luck, BSc (NMR and EPR)
Kelvin Picker, PhD, MRACI (GLC and HPLC)
Jaroslaw T Popiolkiewicz (Electronics)
Peter Turner, BSc *Flin* MSc PhD *NE*

Professional Assistant
S Warren Lazer, PhD

Laboratory Manager
John Duckworth

Administration Manager
Catherine H Woods, BA

Senior Finance Officer
Shanthi Perera

High School Liaison Officer
Jeanette K Hurst, BSc PhD

Administrative Assistants
Sophie Patsalides
Philip Penwright
Anne Woods
Lisa Wu, BBus *CSturt*

Emeritus Professors
Hans C Freeman, MSc PhD, FAA FRACI FRSC CChem
Noel S Hush, DSc *Mane* MSc, AO FRS FAA FRACI

Len Lindoy, PhD DSc *NSW*, FAA FRACI CChem FRSC
Sever Sternhell, PhD DSc DIC *Lond* MSc, FAA FRACI CChem
Walter C Taylor, PhD DSc *Manes* MSc, FRACI CChem

Professorial Fellow
Dalway J S waine, MSc *Melb* PhD *Aberd*, FRACI CChem (Inorganic Chemistry)

Honorary Professors
Leslie D Field, PhD DSc, FAA FRACI CChem
Margaret M Harding, PhD DSc, FRACI CChem
Damon D Ridley, BSc PhD, FRACI CChem
John T Pinhey, PhD DSc, FRACI CChem

Honorary Associate Professors/Readers
Robert S Armstrong, MSc PhD, MRACI CChem
Manuel Aroney, AM OBE, PhD DSc, FRACI FRSC CChem CorrMembAcadAthens
George Bacskay, BSc *Melb* PhD *Camb*
Robert J Hunter, BSc PhD, AM FAA FRACI CChem
Julia M James, BSc PhD *Lond*, MRACI CChem
John C Mackie, PhD DSc, FRACI CChem
Raymond K Pierens, MSc PhD, MRSC MRACI CChem

Honorary Senior Lecturers
James M Eckert, PhD
Anthony R Lacey, MSc PhD, MRACI CChem
Donald V Radford, MSc PhD DipEd *NE*

Honorary Lecturers
Ronald R Fenton, BSc PhD *Macq*, MRACI CChem
Alan J Williams, MSc PhD, MRACI CChem

Honorary Associates
Craig Barnes, PhD, MRACI
Michael M Bishop, BSc PhD *Cant*
Carolyn Dillon, PhD
Peter Hidi, MSc *Bud*, FRACI MIACIS
Sutharsiny Indusegaram, PhD
David Sangster, BSc, FRACI
Simone C Vonwiller, PhD

Geosciences

Head of School
Geoffrey L Clarke, BSc PhD *Melb*

Professor
Andrew D Short, MA *Hawaii* PhD *Louisiana State* BA. Appointed 2003
John Connell, BA PhD *Lond.* Appointed 2001

Edgeworth David Professor of Geology and William Hilton Hovell Lecturer
Peter John Davies, BSc *Leic* PhD *Sheff.* Appointed 1991

Professor of Geophysics
Iain M Mason, BScEng *Cape Town* PhD *Edin.* Appointed 1995

CRC Mining Professor of Mining Geophysics
Peter Hatherly, PhD *Macq*

Associate Professors
Deirdre Dragovich, MA *Adel* PhD
Philip Hirsch, BA *Oxf MPhil Dundee* PhD *Lond*
Dietmar Miiller, BSc *Kiel* PhD *Calif*

Senior Lecturers
Gavin F Birch, MSc PhD GradDipIndAdmin *Cape Town*
Eleanor M Bruce, PhD *WAust*
Peter J Cowell, BA PhD
Stephen J Gale, MA *Oxf* 'PhD *Keele*
Thomas CT Hubble, MAppSc *NSW MSc* DipEd PhD
Michael Glen Hughes, BSc PhD
Philip McManus, BA GradDip *MES* PhD
William Pritchard, BA PhD
Patrice Rey, BSc PhD *Thèse Troisième Cycle, Montpellier-Lyon-Grenoble*

Lecturers
Julie Dickinson, MSc *Walk* PhD *Melb*
Kurt Iveson, BEcon (SocSci) PhD
Melissa R Neave, PhD *NYState*
Derek Wyman, BSc *WOnt* PhD *Sask*

Research Fellows
Elaine Baker, PhD
Jonathan Hargreaves, BSc *York* SPhil *Oxf*

Research Associates
Naomi Carrard, BLibStud
Adriana Dutkiewicz, PhD *Flin*
Joel Fitzherbert, PhD
Carmen Gaina, BSc PhD
Florence Le Hebel, PhD
Stephanie McCready, PhD
Jeffery Neilson, PhD
Daniel A Penny, BA PhD *Monash*
Carina Simmat
Andrew Wyatt, PhD

Emeritus Professors
Maurice T Daly, BA PhD
Trevor Langford-Smith, BA *Melb* MSc *Adel* PhD *ANU* BSc

Honorary Professor
Eric Waddell, BA *Oxf MA McGill* PhD *ANU*

Honorary Associates
David F Branagan, PhD, FGS
David E M Chapman, MEngSc *NSW BA* PhD
Greg Crough
Donald W Emerson, BE MSc *NSW PhD*, FAIG FAIMM
Wayne Erskine
Richard Facer, BSc PhD
Stephanie Fahey, BA PhD
Gabor Foldvary
James Gardner, PhD
Hendrik Heijnis
John P Hudson, MA PhD *ANU*
Mark Hutchinson
Ronald Horvath, MA PhD
Robert A Jones, BEng *WAust* MEng *Auck* MSc *Lond*
Jock B Keene, BAgEc ME PhD *Calif* 'BSc
Keith Klepeis
Louis Moresi, PhD
Gordon Packham, PhD
Graeme Philip, PhD *Cant* DSc *Melb*
Peter Roy, BSc PhD *ImpColl*
Robin F Warner, BA *Birm* PhD *NE*
Edward Wheelwright, DFC MA *StAnd*

Senior Technical Officers
Nelson Cano
Graham Lloyd
David Mitchell
Tom E Savage, BE

Senior Computer Systems Officers
Ivan Teliatnikov
John S Twyman, BSc(Hons)

School Manager
Jennifer Reeks, BA

Finance and Administration Officer
Anu Ananda, BSc BEd

Student Liaison Officer
Cassie Thornley, BLibStud

Immunology

Discipline Head and Professor
Warwick J Britton, MBBS BScMed PhD, FRACP FRCP FRCPA DTM&H

Associate Professor
Helen Briscoe, BSc PhD *Edin*

Senior Lecturer
Robert H Loblay, MBBS PhD, FRACP

Senior Technical Officer
Jason Compton, ADiplAppSc TechCertPhotography

Honorary Associates
Professor Antony Basten, AO, MBBS DPhil *Oxfi* FAA FTSE FRCP FRACP FRCPA
Robert Brink, PhD
Associate Professor Gary M Halliday, BSc PhD *Monash*
Clinical Senior Lecturer Stephen Adelstein, MB BCh PhD, FRACP FRCPA
Clinical Senior Lecturer Roger J Garsia, MBBS PhD, FRACP FRCPA
G Alex Bishop, MScAgr PhD
Barbara D Fazekas de St Groth, BSc(Med) PhD *Melb* MBBS
Mark D Gorrell, BSc PhD *ANU*
Bernadette Saunders, BSc PhD *Melb*
James Triccas, PhD

Infectious Diseases

Discipline Head and Bosch Professor of Medicine
Warwick J Britton, MBBS, BMedSc, PhD, FRACP, FRCP, FRCPA, DTM&H. Appointed 1990

Bosch Professor
Yvonne Edna Cossart, AO, DCP *Lond* BSc(Med) MBBS, FRCPA. Appointed 1985

Associate Professors
Colin Harbour, BSc *Wales* PhD *Lond* (Head of Discipline)
Raymond Kearney, BSc PhD *Qld*

Lecturer
James Triccas, BSc PhD

Clinical Professor
Gwendolyn Lesley Gilbert, MD BSc *Melb,* FRACP FRCPA FASM (with Medicine). Appointed 1990

Clinical Associate Professors
Richard Alan Vickery Benn, DipBact *Lond* BSc(Med) MBBS, FRCPA FRACP FASM (with Medicine)
Margaret Anne Burgess, MD BS, FRACP MACP (with Paediatrics and Child Health and Centre for Immunisation Research New Children's Hospital)

Clinical Senior Lecturers
Ross Bradbury, MBBS, FRACP FRCPA
Thomas Gottlieb, MBBS, FRACP FRCPA
Colin MacLeod, MBBS, FRCPA FRACP MASM FAFPHM (with Medicine)

Senior Research Fellows
Barbara R Rose, BSc PhD, FAIMLS AAIMLT MASM
Karen Vickery, BVSc(Hons), MVSc, PhD
James Manos, BSc PhD *NSW*

Senior Technical Officer
Aniko Pakjos, PhD

Information Technologies

Professor and Head of School
Albert Zomaya, BEng *Cairo* MSc PhD *McG.*

Professors
Peter Eades, BA PhD *ANU.* Appointed Chair of Software Technology, 2000
David Everitt, BE PhD *Qld.* Appointed Chair of Internetworking 2001
David (Dagan) Feng, ME *SJTU MS* PhD *UCLA.* Appointed 2000
Jon D Patrick, DipBehHealthPsych *LaTrobe* Dipl Surv *RMITBSc Deakin* MSc *Dub* PhD *Monash.* Appointed Chair of Language Technologies, 2004
Mary Lou Maher, BS *Col* MS PhD *CMU* FIE

Associate Professors
Joseph G Davis, BSc *Calicut* PostGradDipMgmt IIMA PhD *Pitt*
Alan Fekete, PhD *Harv* BSc
Judy Kay, PhD
Robert J Kummerfeld, PhD

Senior Lecturers
Michael Charleston, PhD *Masse* LTCL *Trinity College London*
Sanjay Chawla, PhD *Tennessee* BA *Delhi*
Jonathan Gray, PhD *Sheffield City Polytechnic* BA *Sheff*
Liaquat Hossain, PhD *Woll*
Geoffrey Kennedy, PhD *Otago* MA *Kent* MSc *Macq* BSc *NSW*
Bjorn Landfeldt, PhD *NSW* Cisco Senior Lecturer in Internet Technologies (jointly with EIE)
Ian A Parkin, PhD *Adel* BSc
Selvakennedy Selvadurai PhD *UPM*
Masahiro Takatsuka, PhD *Monash* ME *Tokyolnst Tech*
Bing Bing Zhou, PhD *ANU* BSc *Nanjing*

Lecturers
Weidong (Tom) Cai, BSc *HuaQiao* PhD
Byounggu Choi, PhD MIS *KAISTBA Korea*
Vera Chung, PhD *QUT*
Seok Hee Hong, PhD *Ewha* MS
Irena Koprinska, PhD *Sofia* MSc *TU-Sofia*
Josiah Poon, PhD MSc *Deakin* BSv(Hons) *Manchester* GradCertEd *Qld*
Uwe Rohm, DipCS *Passau* PhD *ETH Zurich*
Bernhard Scholz, Dipl-Ing Dr Techn. *TUVienna*
Anastasios Viglas, MA PhD *Princeton*
Kalina Yacef, PhD MSc DEA *Paris*
Ying Zhou, PhD *NUS* MEng BSc *Nanjing*

Associate Lecturers
Simon Poon, MEng *UTS* BSc GradCert MathsSci *UTS*
Xiu Ying Wang
Zhiyong Wang, PhD *HKPU*

Research Staff
Cindy Bai, Research Assistant
Fabian Brites, Research Associate
Bernd Burgstaller, MS PhD *TU-Vienna,* Research Associate
James Curran, ARC Postdoctoral Fellow, PhD *Edin,* BSc(Adv)
Jahan Hassan, Research Fellow
Geoff Langdale, PhD MSc *Carnegie Mellon,* Research Fellow
Nick Lowe, Research Associate
Ricky Subrata, Research Fellow
Michael Till BSc (Hons), Research Associate
Chen Wang, Research Fellow
Lingfeng Wen, PhD, Postdoctoral Fellow

Computer Systems Supervisor
Greg Ryan, BSc(Hons)

Computer Systems Officers
Roy Giles, BSc *Wales*
Bruce Janson, BSc(Hons)
Ronald Jore, BSc(Hons) *TU Berlin*
Piers R Lauder, BSc *Warw* DipCompSc *Brad*
David London
Abed Kassis, BSc (Hons) *Melb*

Chief Technical Officer
Remo Di Giovanni

Senior Technical Officers
Allan Creighton
Arthur Scott

Technical Officers
William Calleja
Witold Janus

Administrative Manager
Helene Orr, BA *UNE*

Administrative Officers
Sharon Chambers
Suzy Dodd, BA BSc
Candice Fenech
Wei Ying Ho
Karen Hunter, BA(Hons) *UCLan*
Judith Maddison
Michael McCabe
Josephine Spongberg

Adjunct Professor
Professor Ya Qin Zhang

Honorary Appointments
John Baker, PhD *NSW*
Em Professor John Makepeace Bennett AO, PhD *Camb* BE(Civ) BE(Mech&Elec) BSc *Qld*, FTS FACS FBCS FlEAust FIMA
Fang Chen, MBA *Warnborough* PhD *Beijing Jiaotong Uni* BE MEngSc *Beijing Aeron & Astron*
Zheru Chi, BEng MEng PhD *Zhejiang*
Merl De Silva, MBBS *Ceylon* DMRD Royal College of Physicians, London FRACR Royal Australian College of Radiologists
Stefan Eberl, MSc PhD *NSW*
Michael Fulham, MB BS *NSW*
Roger Fulton, MSc PhD *UTS*
Ian Gorton, PhD *Sheff*
Michael Hitchens, PhD *Newcastle (NSW)*
Doan B Hoang, BE ME *WAust* PhD *Newcastle (NSW)*
Brian Hutton, MSc *Aberd* PhD *UTS* BSc
Jeffrey Kingston, BSc PhD
Ray Lister, PhD
Zhonghua Ma, BEng *SJTU*, MEng *DLUT*, PhD *SJTU*
Chris Maltby
Gordon McCalla, BSc MSc *Alta* PhD *BrCol*
Eric McCreath, PhD *NSW BE*
Steve Meikle, PhD *NSW*
Agathe Merceron, PhD *Paris*
Cecile Paris, PhD *Col*
Jack R Phillips, BMechE PhD *Melb*
Aaron Quigley, PhD *Newcastle* BS(Mod) Hons *Trinity College Dublin*
Muhammad Salam, MSc *Karachi* PhD *Cant*
Andrea Stern, BA *Macq* Diploma *NSW*
Richard Thomas, BSc *U College North Wales*, MSc *London School Economics*, MPhil *York*, PhD *UWA*
Eric Tsui, PhD *Deakin*
Kai Xu, PhD *QLD*, BEng (IT) BEng (Bus) *SJTU*
David Zhang, PhD *HarbinIT*PhD *UWaterloo*
Hong Jiang Zhang, PhD *Denmark* BS *Zhengzhou*
Jian Zhang, BSc *EChina Normal* PG Dip *Shanghai Inst Mech Eng* MSc *Flin* PhD *NSW*

Mathematics and Statistics

Professor in Pure Mathematics (Personal Chair)
John J Cannon, MSc PhD. Appointed 2000

Professor in Pure Mathematics
Edward Norman Dancer, BSc *ANU* PhD *Camb*, FAA. Appointed 1993

Professor in Applied Mathematics
Nalini Joshi, MA PhD *Prin* BSc. Appointed 2002

Professor in Mathematical Statistics (Personal Chair)
John Robinson, BSc *Qld* PhD. Appointed 1991

Professor in Mathematical Statistics
Neville C Weber, MSc PhD, AStat. Appointed 2005

Readers
Donald I Cartwright, PhD /// BSc
Jonathan Hillman, BSc *WAust* AM *Harv* PhD *ANU*
King-Fai Lai, BSc *Lond* MPhil PhD *Yale*

Associate Professor and Head of School
Donald E Taylor, MSc *Monash* DPhil *Oxf*

Associate Professors
William G Gibson, MSc *Cant* PhD *NSW*
Robert B Howlett, BA PhD *Adel*
Charles C Macaskill, BSc PhD *Adel*

Director of Junior Studies
Sandra C Britton, BSc *NSW* MA

Senior Lecturers
Peter W Buchen, PhD *Camb* BSc
Christopher M Cosgrove, BSc PhD
Clio Cresswell, BSc PhD *UNSW*
Daniel Daners, PhD *Zurich*
David Easdown, BA *ANU* PhD *Monash*
David J Galloway, BA PhD *Camb*
Jenny Henderson, DipEd *Flin* MSc
David J Ivers, BSc PhD
David R Kohel, BSc *Texas A&M FhD Berkeley*
Andrew P Mathas, BSc MSc PhD ///
Alexander I Molev, Diploma PhD *Moscow*
Gordon P Monro, BSc *Monash* PhD *Brist*
Mary R Myerscough, DPhil *Oxf* MSc
Nigel R O'Brian, MA *Camb* PhD *Warw*
William D Palmer, MLitt MA *NE* BSc PhD DipEd
Laurentiu Paunescu, MSc *Bucharest* PhD
M Shelton Peiris, DipMath MSc *Peradeniya* PhD *Monash*
Mary C Phipps, MSc
Rosemary S Thompson, BSc *ANU* PhD
Ruibin Zhang, BSc *Shandong* PhD *Tas*

Lecturers
Sanjeeva Balasuriya, BS *Lafayette* ScM PhD *Brown*
Emma Carberry, BSc *Monash* PhD *Princeton*
Adrian M Nelson, PhD *Lond* BSc
Marc E Raimondo, MSc DipStats PhD *Paris VII*
Michael I Stewart, BSc MA PhD
Qiying Wang, BSc *Anhui* MSc *S & T China* PhD *Woll*
Martin Wechselberger, MSc PhD *Vienna*
Jean Yee HwaYang, PhD *Calif* BSc

ARC Professional Fellows
Gustav I Lehrer, PhD *Warw* BSc, FAA
Leon Poladian, PhD GradDipEd *NE*

Postdoctoral Fellow
Anthony Henderson, PhD *MIT BSc*

Sesqui Postdoctoral Fellows
Martine F Girard, LM MM PhD *Paris 7*
Sinead L Lyle, BA *Oxf MSc Edin* PhD *London*
Scott H Murray, BSc *ANU* SM PhD *Chic*
Alison E Parker PhD *London* BSc

Research Fellows
Nils Ackermann, Diploma *Karlsruhe* PhD *Geissen*
Claus Fieker, DipMath *Heinrich-Heine* PhD *Berlin*
Georg Gottwald, Diploma *DusseldorfPhD Monash*
Michael Harrison, BA (Hons) PhD *Camb*
Oliver Ruff, PhD *Claude Bernard*

Senior Research Associates
Leslie Farnell, MA DPhil *Oxf* DipEd *Canberra*
Alan K Steel, BA
William R Unger, PhD

Research Associates
Geoffrey M Bailey, BSc
Robert Carls, PhD *Leiden*
Brian Day, BSc MSc PhD *NSW*
Steve Donnelly, BSc *ANU* PhD *Georgia*
Frederik Hurst, PhD *Heidelberg*
Guanglian Zhang, BSc PhD *Tsinghua*

Research Assistants
Anne P Cannon, BA MPhil
Nicole J Sutherland, BSc *Macq*

Computing Manager
James S Richardson, PhD *Warw* MSc

Computer Systems Officers
Robert B Pearson, BIT *CSturt ADipA Mitchell CAE* BSc
Paul Szabo, BSc *Havana*
Michael R Wilson, BSc

Software Engineer
Damien K Fisher, BSc *NSW*

Administration Manager
Joan Buckley, BA(Hons) GradCert MBA *CSturt*

Finance Officer
Julie L Small

Administrative Assistants
Flora Armaghanian
Janet R Thomas
Sonia Morr

Student Services Office Manager
Chamreun Cheen, BSc BCA *Well*
Administrative Assistant
Mercedes Bolanos

Emeritus Professors
Gregory M Kelly, BA PhD *Camb* BSc, FAA
Eugene Seneta, MSc *Adel* PhD *ANU,* FAA.
Gordon E Wall, BSc *Adel* PhD *Camb,* FAA
Peter R Wilson, BA MSc *Melb* PhD, FRAS

Visiting Professors
Richard Cowan, BSc PhD GradDip
Nicholas I Fisher, PhD *NthCarolina* DSc
Mark Watkins, BSc PhD

Honorary Reader
Tzee-Char Kuo, BS *Natnl Taiwan* PhD *Chic*

Honorary Associate Professors
Edward D Fackerell, MSc PhD
Terence M Gagen, BSc *Qld* PhD *ANU*
Ronald W James, BSc PhD
John M Mack, MA *Camb* BSc PhD
Malcolm P Quine, MSc *Lond* PhD *ANU*
Denis E Winch, MSc PhD, FRAS

Honorary Senior Lecturers
Koo-Guan Choo, BSc *Nan* MSc *Ott* PhD *BrCol*
Roger W Eyland, PhD *Camb* MSc
W Barrie Fraser, BSc ME *Cant* SM PhD *Harv*
James N Ward, BSc PhD
Karl H Wehrhahn, BSc *Alta* PhD

Honorary Lecturers
Howard J DAbrera, PhD *Calif* BSc
Humphrey M Gastineau-Hills, MSc PhD

Honorary Associates
Noelle Antony, PhD
Geoffrey R Ball, BA
Donald W Barnes, DPhil *Oxf* BSc
A J Berrick, PhD
Clare Coleman, PhD
Diana Combe, MSc *London* BSc PhD
Wen Dai, BSc *Yunnan* MSc *Beijing* PhD *ANU*
Volker Gebhardt, PhD
John Graham, PhD
Brian Gray, BSc PhD *Mane,* FRACI FRSC
Joseph Hammer, PhD
Joachim Hempel, PhD
Michael S Johnson, PhD
Otto Konstandatos, BSc LLB PhD
Stephen G Lack, BSc PhD *Camb*
Arjen Lenstra, MA PhD *Amsterdam*
Hugh C Luckock, BSc *Auck* PhD *Newcastle (UK),* ASIA
Ben Martin, PhD
Leanne Rylands, MSc PhD
Ross H Street, PhD
Ranjit Thuaisingham, PhD
Jonathan Turner, PhD
Shusen Yan, BSc MSc PhD
Ruxue Yu, MSc PhD

Molecular and Microbial Biosciences

Biochemistry

Professor of Molecular Biology
Iain L Campbell, BSc PhD. Appointed 2004

Professor
Richard I Christopherson, BSc PhD Melb (Personal Chair). Appointed 1998

Professor
P Merlin Crossley, BSc *Melb* DPhil *Oxf* Appointed 2005

McCaughey Professor and ARC Australian Professorial Fellow
Philip W Kuchel, BMedSc MB BS Adel PhD ANU, FAA. Appointed 1980

Associate Professors
Arthur D Conigrave, BSc(Med) MB BS MSc PhD, FRACP
Gareth S Denyer, MA DPhil *Oxf*
Alan R Jones, PhD *Mane*

Senior Lecturers
Charles A Collyer, BSc *Flin* PhD
Stuart J Cordwell, BSc PhD
Simon B Easterbrook-Smith, BSc *Well* PhD *Adel*

Lecturers
Dale P Hancock, BSc PhD
Jill M Johnston, BSc *Qld* DipEd *CatholicCE(Syd)*
David Langley, BSc PhD
Hannah Nicholas, BMedSc DPhil *Oxf*

ARC Federation Fellow
Jill Trewhella, MSc *UNSW PhD,* FAAAS

Principal Research Fellow
J Mitchell Guss, BSc PhD

Senior Research Fellow
William A Bubb, DIC *Lond* BSc PhD

NHMRC Senior Research Fellow
Joel P Mackay, BSc *Auck* PhD *Camb*

S&C Viertel Senior Research Fellow
Jacqueline M Matthews, BSc MSWPhD *Camb*

CJ Martin Fellow
Janet Deane, BMedSc PhD
Chu Kong Liew, BSc PhD
Anthea Newton, BSc PhD

Research Fellows
Adrienne Adams, BSc PhD *Melb*
Bogdan E Chapman, BSc PhD *ANU*
Allan H Torres, BSc *UPLB* PhD *Alberta*

Proteomics Research Fellow
Ben Crossett, BSc *Mane* PhD *Camb*

ARC Australian Postdoctoral Fellow
David A Gell, BSc PhD *Camb*

NHMRC RD Wright Research Fellow
Margaret Sunde, BSc *Cape Town* PhD *Camb*

Postdoctoral Fellows
Jennifer Bodkin, BSc PhD

Anthony P Duff, BSc PhD *NSW*
Jason A Lowry, BS *Case W Reserve* PhD *NCarolina State*
Suzanne M Mithieux, BSc *NSW*
Richard C Pearson, BSc PhD *Lond*
Sharon Pursglove, BSc *Woll* PhD *Adel*
Alexis Verger, BSc PhD *Paris*
Ursula Rodgers, MAppSc *NSW BSc*

Senior Technical Officers
Robert T Czolij, BSc *Macq* BiolTechCert *STC*
Joseph Dimauro, MSc
William G Lowe, BiolTechCert *STC*
Ross I Taylor, FittMachCert ToolmakingCert *STC*

Technical Officers
Margaret Espejel, AssocDipMedSc *Riverina CAE*
John C Foster, BSc MSWGradDip (EnvStud) *Macq*
Cesar De La Paz
Debra Phillips, QTACert *NZIMLT* (part-time)

Research Associate
Liza Cubbedu, BTech *Macq* PhD

Research Assistants
Camilla W-J Chan, BSc
Virginia Post, BSc *Zurich*
Orsola M Regaglia, BSc *WSyd*
Regina Zabaras, BSc MSc(Hons) *WSyd*

Laboratory Assistants
Brian Francisco
Peter W Kerr
Ben Monaghan, DipHealthSc *TAFENSW*

Glassware Cleaners
Joyce Menouhos (part-time)
Lynette T Menouhos (part-time)
Margaret Ramsay (part-time)
Jun Wang

Honorary Appointments
Emeritus Professors
Hans C Freeman, AM, MSc PhD, FAA FRACIFRSC CChem
Noel S Hush, DSc *Mane* MSc, FRS FAA FRACI
Robert G Wake, MSc PhD, FAA

Adjunct Professor
Robert C Baxter, PhD DSc, FAACB

Clinical Associate Professors
Peter Stewart, MBBS MBA, FRACP FRCPA
David R Sullivan, MBBS, FRACP FRCPA

Adjunct Senior Lecturer
Stephen P Mulligan, MBBS *NSW PhD*, FRACP FRCPA

Adjunct Lecturer
Stephen D Lyons, BSc *Melb* PhD MBBS

Honorary Associates
Nihal S Agar, MVetSci PhD *Agra*
Renze Bais, BSc PhD *Adel*
Larissa Belov, BSc *Qld* PhD *Macq*
Gheorghe Benga, MSc PhD MD *Cluj*
Leslie Burnett, BSc *Melb* MBBS PhD
Roderick JD Clifton-Bligh, BSc(Med) MB BS PhD *Camb*
Ivan Darvey, BSc PhD *NSW*
Christopher J Garvey, MSc
Glenn F King, BSc PhD
Michael A Messer, MSc PhD *Melb*
Peter J Mulquiney, BSc PhD
Hossein Nouri-Sorkhabi, BSc *Tabriz* PhD *Wales*
Caroline Rae, BSc PhD
Michael Slaytor, MSc PhD
Jamie I Vandenberg, PhD *Camb* BSc(Med) MBBS
Vivian KL Whittaker, MBBS *Qld* PhD *ANU*
James S Wiley, BA *Oxf MBBS* MD

Human Nutrition Unit

Boden Professor of Human Nutrition
Ian D Caterson, AM, BSc MBBS PhD, FRACP
Appointed 1997

Professor
Janette C Brand-Miller, BSc PhD *NSW*, FAIFST (Personal Chair)
Appointed 2002

Associate Professor
Samir Samman, BSc PhD

Lecturer
Kim Bell-Anderson, BSc PhD *NSW*

Associate Lecturer
Beth Rohrlach, BSc DipNutrDiet, APD

NHMRC Research Fellow
Bing Wang, MD *Tianjin* PhD

Research Associate
AnnaM Rangan, BSc GnJDipNutrDiet *QITPhD Curtin* (part-time)

Research Manager, IOTF
Timothy P Gill, BSc *Tas* BSc GradDipDiet PhD *Deakin*

Research Manager, SUGiRs
Fiona S Atkinson, BSc MND

Clinical Trials Manager
Philippa V Lee

Technical Officer
Jenny L Phuyal, AnimTechCert *TAFE NSW* (part-time)

Administrative Assistants
Marianne Alexander (part-time)
Violeta Birks, GradCertHRM DipHRM *TAFENSW*
Joyce Calvitto

Emeritus Professor
A Stewart Truswell, AO, MB ChB MD *CapeT DSc*, FRCP FRACP FFPHM

Honorary Appointments
Honorary Lecturer
Soumela Amanatidis, BSc DipNutrDiet, APD

Clinical Senior Lecturer
Tania P Markovic, MBBS PhD *NSW*

Clinical Lecturer
Margaret Nicholson, BSc DipNutrDiet DipEd MEd

Clinical Associate Lecturer
Fiona Simpson, BSc(Nutr) *Woll* MND APD

Honorary Associate Lecturers
Suzie Ferrie, GradDipFoodTech AttWBSc MNutrDiet
Sue Radd, BSc GradDipDiet *Deakin*
Nicola Riley, BSc MNutrDiet

Honorary Associate
Louise Kefford, BSc MNutrDiet

Honorary Clinical Supervisors
Caroline Adams, BSc DipNutrDiet *Deakin*
Susan Bloomfield-Stone, BAppSc(Nutr) MSc(NutrDiet)
Julie Bracks, BSc DipNutrDiet APD
Lisa Brearley, BSc *Melb* MSc(NutrDiet) *Woll* MHN *Deakin*
Meagan Byrne, BHlthSc(NutrDiet)
Jose Cabello, DipNutrDiet *Chile*
Michele Carroll, BHlthSc (NutrDiet) *Newcastle (NSW)*
Amande Carr-Thompson, BSc *Griffith* MND *Griffith*
Charlotte Denman, BSc DipNutrDiet *Deakin*
Debbie Edward, BSc HEc(NutrDiet) *MtStVin* GradDipEdStud
Lisa Eldridge, BSc MNutrDiet
Margaret Forbes, CertDiet RMH MBA *NTerritory*

Jane Ford, DipNutrDiet *Leeds*
Bernadette Galing-Aquino, BSc DipNutrDiet
Kim Gourley, BHlthSc(NutrDiet) *Newcastle (NSW)* GradDipHlthSc *Curtin*
Marie Hazelwood, BSc *NE* DipNutrDiet *QldUT*
Tanya Hazelwood, MSc(NutrDiet) *Woll*
Tracy Herlihy, BSc GradCertNutrDiet *QldUT* GradCertPaedNutr *Melb*
Roy Hoevenaars, BSc PhD *Monash* DipNutrDiet
Margaret Holy day, BSc DipNutrDiet
Michelle Hughes, BSc DipNutrDiet
Kieu Huynh, MHealthAdmin GradDipFoodTech AttWBSc MNutrDiet
Christine Josephson, BSc GradCertMgmt *Canada*
Louise Kefford, BSc MNutrDiet
Meredith Kennedy, MSc(NutrDiet) *Woll*
Lyn Lace, BSc DipNutrDiet
Sharon Lamb, BSc MND
Robert Lange, BSc Q/dGradDipNutrDiet £>/<iLTGradCertDiabetesEduc *Deakin*
Maria Loveday, BSc *Deakin* CertDiet *Vic*
Nasseem Malouf, MSc *Beirut* PhD DipNutrDiet
Jenny McDonnell, BSc DipNutrDiet
Jenny McQueen, BSc MHlthSc GradDipDiet GradDipInfoStud
Lesley Miller, BSc DipNutrDiet
Radha Murthi, MNutrDiet *Madr*
Gillian Nisbet, BSc DipNutrDiet
Nola Patterson, BSc *Qld* DipNutrDiet
Tracey Patricks
Aditi Patwardhan, BSc MNutrDiet
Kerrie Phelps
Joanne Prendergast, BSc *Acad Pdt Montr* MHPEd *NSW*
Jennifer Ravens
Vanessa Richardson
Nicola Riley, BSc MNutrDiet
Selina Rowe, BHlthSc(NutrDiet) APD
Trish Ryan, BAppSc(FoodNutr) GradDipDiet *WAIT*
Elizabeth Scott, BSc DipNutrDiet
Marie Smith, MNutrDiet
Lydia Sutakowsky, BSc *Qld* DipNutrDiet *UTS*
Anne Swain, BSc DipNutrDiet PhD
Peter Talbot, BSc MSc(Med) DipNutrDiet
Scott Wagner, BSc DipNutrDiet GradCertPaedDiet
Bill Wedgewood, BSc GradDipDiet *Deakin*
Natalie Wilson, MSc(NutrDiet) *Woll*

Honorary Community Supervisors
Soumela Amanatidis, BSc DipNutrDiet MPH
Polly Antees
Alan Barclay
Rudy Bartl, BSc DipNutrDiet
Elizabeth Cant, BSc(Diet) *Edinburgh* SRD APD
Kathy Chapman, BSc MNutrDiet
Andrew Davison, BHlthSc(NutrDiet) *Newcastle (NSW)*
Jane Dibbs, BSc DipNutrDiet
Susan Dumbrell, BSc MNutrDiet
Rowena Duns, BNutrDiet *Woll*
Pam Gollow, BAppSc GradDipDiet *WAIT* MPH *NTerritory*
Trish Griffiths, GradDipCommM *UTS* BSc DipNutrDiet MPH
Louise Houtzager, MSc(NutrDiet) *Woll*
Alicia Keryon, BHlthSc MND
Judith Leahy, BSc *NSW* DipNutrDiet
Melissa Macdouall, BHlthSc(NutrDiet) *Newcastle (NSW)*
Melinda Morrison, MSc(NutrDiet) *Woll* GradCertDiabEd *Deakin*
Catherine Offner, BHthSc(NutrDiet) *Newcastle (NSW)*
Simon Sadler, BHthSc(NutrDiet) *Newcastle (NSW)* MPH
Leanne Scanes, BHlthSc(NutrDiet)
Lynette Stewart, BScAgr BA DipNutrDiet *Macq*
Helen Taylor, BSc(Nutr) *Leeds* CertEduc *Vic Manchester*

Honorary Food Service Supervisors
Susan Burke, BSc DipFoodTech *NSW* DipNutrDiet
Gladys Hitchen, MSc(NutrDiet) *Lima*
Andrew Howie, BSc DipNutrDiet
Suzanne Kennewell
Maria Kokkinakos, BSc DipNutrDiet
Carmel Lazarus, BSc MNutrDiet GradDipBusAdmin *UTS*
Fifi Spechler, BSc DipNutrDiet
Jayne Taylor, MNutrDiet
Carol Zeuschner, BSc GCertHlthMgmt MSc(NutrDiet) *Woll*

Honorary Industry Supervisors
Rebecca Bousted, BSc MSc (NutrDiet) *Woll*
Yvonne Bowyer
Megan Cobcroft, BSc GradDipNutrDiet MPH&TM
Trish Guy, BHlthSc(NutrDiet) *Newcastle (NSW)*
Natalie Hayllar, BSc(Nutr&Psych) MSc(NutrDiet) *Woll*
Wendy Jeffrey
Gina Levy, BSc BNutrDiet PhD
Sharon Natoli, BSc BNutrDiet *Flin* GradDipBus *RMIT*
Penelope Small, BSc MSc(NutrDiet)
Kathy Usic, BEd MSc(NutrDiet) *Woll*

Microbiology

Professor
Peter Richard Reeves, BSc PhD *Lond,* FAA MASM. Appointed 1985

Reader
Thomas Ferenci, BSc *Lond* PhD *Leic*

Senior Lecturers
Deidre A Carter, BSc *Otago* PhD *Lond* (part-time)
Andrew J Holmes, BSc PhD *Qld*

Lecturer
Helen M Agus, MSc *NSW,* MASM

NHMRC Principal Research Fellow
Ruth M Hall, PhD *Edin* DipEd *Monash* MSc

Postdoctoral Fellows
Shona Blair, BSc PhD
Nicholas V Coleman, PhD
Jocelyn D'Souza, BSc PhD
Liam Elbourne, PhD

Research Assistants
Tien M T Bui, BMedSc
Shona J Seeto, BSc
Gordon Stevenson, BSc *Adel*
Kate Wilson, BSc

Technical Officer
Vincent Lai, BMedSc

Glassware Cleaners
Ana M Julca (part-time)
Trudie T Smith (part-time)

Honorary Appointments
Adjunct Senior Lecturer
Ruiting Lan, BScAgr *Jiangxi* PhD

Honorary Associate
John I Pitt, PhD *Calif*

Molecular Biotechnology

Professor
Anthony S Weiss, BSc PhD. Appointed 2003.

Senior Lecturer and Director
Kevin Downard, BSc PhD *Adel*

Lecturers
Rachel Codd, BSc *Macq* PhD
Neville Firth, BSc PhD *Monash*

Molecular Biotechnology Program Coordinator
Katy Wilson, BA

Research Assistant
Margaret Streamer, BSc *UNSW PhD JamesCook*

Honorary Appointments
Adjunct Professor
Keith Williams, BAgSc *Melb* PhD *ANU*

School Administrative Staff
Professional Officer/School Laboratory Manager
Ziaul I Ahmad, MAppSc *UTS*

Information Technology Officer
Douglas J Chappell, BA BSc PhD DipEd

Computer Systems Manager
Jennifer Wong, BSc

Senior Administrative Officer
Danielle Wells, BSc *NSW* (part-time)

Senior Finance Officer
Stephen P Conaghan

Administrative Officer - Student/Teaching Support
Rachel Moerman, BA GradDipIM(Lib) *UNSW*

Administrative Assistants
Annie Au
Michelle Dulanas, BA *Santo* MSCD *Newcastle (NSW)*
Bronwyn G Ferguson (part-time)
M Rashid Idris, MSc *Karachi*
Louise McLoughlin
Christopher Trott, BA *Car* (part-time)

Attendant
Max A Francis

Pathology

Professor
Nicholas H Hunt, BSc PhD *Aston.* Appointed 1989

Associate Professors
John Hilton, RFD MB ChB *StAnd,* FRCPA
Nicholas JC King, MB ChB *Cape TPhD ANU*

Senior Lecturers
Shishan Bao, MB BS *Shanghai* PhD
Brett D Hambly, BSc(Med) MBBS PhD
Roger S Pamphlett, BSc(Med) MD ChB *Cape T,* FRACP MRCPath

Pharmacology

Professor of Clinical Pharmacology
J Paul Seale, MBBS PhD *Lond,* FRACP. Appointed 1992

Professors
Judith L Black, MBBS PhD, FRACP. Appointed 1997
Graham A R Johnston, AM, MSc PhD *Camb,* CChem FRACI FTSE. Appointed 1980

Clinical Professor
Gillian M Shenfield, MA BCh DM *Oxf* FRCP FRACP. Appointed 1993

Associate Professor and Head of Discipline
Ian Spence, BSc PhD *Monash*

Associate Professors
Robin D Allan, BSc *Qld* PhD *JamesCook*
Christopher Liddle, MBBS BSc(Med) *NSW PhD,* FRACP
Ewan J Mylecharane, BPharm *VIC* BSc PhD *Melb*
Robert J Vandenberg, BSc PhD

Senior Lecturers
Jasmine M Henderson, BSc DipNutrDiet PhD
Peter RA Johnson, BSc PhD
Hilary GE Lloyd, BSc *Brist* MSc PhD *Lond*

Clinical Senior Lecturers
Michael Kassiou, BSc PhD *NSW*

Lecturer
Jonathan C Arnold, BSc PhD
Brent McParland, PhD

Associate Lecturers
Robyn Billing, BSc
Tina Hinton, PhD
Stefanie Leung, BSc

Research Fellow
Janet K Burgess, BSc *Adel* PhD *NSW*

Postdoctoral Fellows
Colm Crean, BSc PhD *Dublin*
Ann Mitrovic, PhD

Adjunct Professor
Susan M Pond, AM, MBBS MD *NSW,* FRACP FTSE

Conjoint Associate Professor in Physiology and Pharmacology
Paul M Pilowsky, BMedSc BMBS PhD *Flin*

Honorary Associate Professors
Rosemarie Einstein, BSc PhD
Michael Roth, Dipl *Goethe* PhD *Basel*
Graham A Starmer, MSc *Mane* PhD

Honorary Associates
Sandra D Anderson, PhD *Lond* BSc
Gregory B Chesher, MSc PhD
L Bruce Cobbin, BSc *Melb* PhD
Gavin Dixon, PhD
Richard Donnelly, MB ChB MD *Birm* PhD *Glasgow,* MRCP FRACP
Peter Gray, BSc PhD
Annette S Gross, BPharm PhD
Herbert F Jelinek, BSc *NSW* GradDipNeurosci *ANU* PhD
Desmond J Maddalena, MAppSc DipTech *NSWIT PhD*
Karen McKay, BSc PhD
Jennifer Ong, BSc PhD *Adel*
Xianqin Qu, PhD
Diana M Temple, AM, BSc *WAust* MSc PhD
Christopher W Vaughan, BE MBiomedE *NSW* PhD
Sandra N Webb, BPharm *VIC* PhD *Strath*

Physics

Professor in Physics (Material Physics)
David R McKenzie, BSc PhD *NSW*

Professor in Physics (Electromagnetic Physics)
Ross C McPhedran, BSc PhD *Tas*

Professor in Theoretical Physics
Martijn de Sterke, MEng *Delft* PhD *Roch*

Professor in Astrophysics
Richard W Hunstead, BSc PhD

Australian Professorial Fellow and University Chair
Donald B Melrose, BSc *Tas* DPhil *Oxf*

Associate Professor and Head of School
Brian W James, BSc PhD

Associate Professors
Timothy R Bedding BSc PhD
Anne Green, BSc *Melb* PhD

Adjunct Professors
Matthew Colless, Bsc PhD *Camb*
Richard N Manchester, BSc *Cant* PhD *Newcastle (NSW)*

Adjunct Associate Professors
John Drew, BSc *Adel* MAppSc *NSWIT*
Roger Fulton, PhD *UTS*
Lyn Oliver, MSc *Lond* PhD *Camb*
Natalka Suchowerska, BSc *Birm* MSc *UTS* PhD
Robert Wilkins, BE MEngSc PhD

Senior Lecturers
Clive Baldock, BSc *Sus* MSc PhD *Lond*
Joseph Khachan, BSc PhD *NSW*
Serdar Kuyucak, BSc *METU* PhD *Yale*
Geraint Lewis, BSc *Lond* PhD *Camb*
Nigel Marks, BSc PhD
John W O'Byrne, BSc PhD
J Gordon Robertson, BSc *Adel* PhD
Manjula D Sharma, MSc DAPh *SPac*
Kevin E Varvell, BSc *WAust* DPhil *Oxf*

Lecturers
Stephen Bartlett, BSc *Waterloo* MSc PhD *Toronto*
Nicholas Ekins-Daukes, MSc *StAnd* MSc PhD *Lond*
Zdenka Kuncic, BSc PhD *ANU*

Federation Fellows
Marcela M Bilek, BSc PhD *Camb* MBA *Roch*
Benjamin J Eggleton, BSc PhD
Bryan Gaensler, BSc PhD
Peter A Robinson, BSc PhD
Catherine Stampfl, BSc(Hons) PhD *LaTrobe*

Australian Professorial Fellows
IverH Cairns, BSc PhD
Elaine M Sadler, BSc *Qld* PhD *ANU*
Sergei Vladimirov, MSc PhD *Mosc*

ARC Postdoctoral Research Fellow
David J Moss, BSc *Waterloo* MSc PhD *Toronto*

Senior Research Fellows
Qinghuan Luo, BSc *NIHM* MSc *Heilonjiang* PhD
Eric Magi, BSc *ANU* PhD *NSW*
Oliver Warschkow, BSc PhD *Toronto*

ARC Queen Elizabeth II Research Fellow
Andrew Hopkins, BSc PhD
Kostyantyn Ostrikov, DSc *Kharkov*
Michael S Wheatland, BSc PhD

Australian Research Fellow
Peter G Tuthill, BSc *Qld* BSc(Hons) *ANU PhD Camb*

Research Fellows
Matthew Boreland, BSc PhD *NSW*
Seyed Reza Hashemi-Nezhad, MSc PhD *Birm*
Eduard N Tsoy, MSc *St Petersburg* PhD *Tashkent*
Yongbai Yin, MSc *Nankai* PhD

ARC Postdoctoral Research Fellows
Nelson K L Ng, PhD

Postdoctoral Fellows
Turgut Bastug, MSc DSc *Kassel*
Stephen Bosi, BSc PhD *NSW*
Julia J Bryant, PhD
James Canvin, MSc *Mane* DPhil *Oxf*
Christopher Dey, PhD
Libin Fu, BS *Wuhan* MS PhD *Peking*
Naoki Fujisawa
Bee Kwan Gan, PhD
Rodrigo Gil-Merino, BSc *Laguna* PhD *Potsdam*
Helen M Johnston, PhD *CalifIT BSc*
Laszlo Kiss, DPhys PhD *Attila*
Alexey Kondyurin, PhD *Perm*
Boris T A Kuhlmey, PhD
Susan Law, PhD
Manfred Lenzen, PhD Dip *Bonn*
Peter Loxley, BSc *Murd* PhD *UWA* BSc
Bo L Li, MSc *Nankai* PhD *JCUNQ*
Christelle Monat PhD *LEOM, CNRS*
Richard Morrow, BSc *Adel* PhD *Flin* BA
Tara Murphy, PhD *Edin* BSc
Stephen Ord, BSc *Leic* MSc *Sussex* PhD *Mane*
Holger Stoeck, MS PhD *Bochum*
Sergiy Vynogradov, DSc PhD *Kharkov*
Paul Watson, BSc MSc *Waikato* PhD *Camb*
Jeanette I Weise, BSc PhD *Melb*

Professor Harry Messel Fellow
Lucyna Kedziora-Chudczer, MAstron *OAUJ* MSc PhD

Denison Research Fellows
Cenk Kocer, BSc *Monash* PhD
Dixon Kwok, BSc PhD *Camb*
Alexander A Samarian, MSc *Kiev* PhD *RAS (Mosc)*

Research Associates
Timothy Adams
Reda Adkim
Justin Blows
Hans Bruntt PhD *Aarhus*
Xiangyuan Carl Cui
Damien Carter
Peter Drysdale, BSc LLB PhD
Xiangmei Duan
Alexander Fuerbach
Blanca Gallego
Christian E Grillet
Shiqiang Hao
Daniel F Hevia
Ramzi Kutteh, BS *Toronto* MS *Poly Inst NY Purdue*
Ben McMillan
Neil Nosworthy
Swarma M Patra
Rebecca Powles
Hongqing Shi
Aloysius Soon
Richard Tarrant, BA MSc PhD
Mira Todorova
Snjezana Tomljenovic-Hanic
Eduard Tsey
Hyun Yoon
Xingqiu Yuan

Julius Sumner Miller Fellow
Karl Kruszelnicki, BSc MBioMedEMWMBBS

CUDOS Chief Operating Officer
Chris Walsh, PhD

CUDOS Laboratory Manager
Jeremy Bolger, BSc *UWA* PhD *Heriot-Watt*

Teaching Laboratory Support Staff
Paul Ferguson
Marek Dolleiser
Amelita Napthali
Barry Napthali
Myo Win

Computing Staff
Sebastian Juraszek, PhD
Anthony Monger, PhD
Guoliang George Shan
Paul Leopardi, BSc MCom MSc *UNSW*

Technical Officers
Robert Davies
Phil Denniss
Barbara Piestrzynska
Lai Chun So

School Administration Manager
Paul Harbon, MBA DipMngmt *Deakin* DipMath *SQld* BSc

Science Communicator (Physics)
Phil Dooley, BSc PhD *ANU*

Student Support Office
Hyacinth Alfonso
Eve Teran, BSc

Finance
Nelly Leh Hwa Liew
David Young

Personnel and Administrative Officer
Chindy Praseuthsouk, DipHRMngmt *SITE A*

Administrative Assistants
vacant
vacant

Science Foundation Executive Officer
Chris Stewart, BSc *UQ* DipScComm *ANU* PhD *York*

Science Foundation Fundraising Coordinator
Alison Thorn

Science Foundation Administrative Assistant
Alex Viglienzone

Physics Workshop Manager
Graham Mannes

Physics Workshop Technical Officers
Michael Paterson
Terry Pfeiffer

Molonglo Telescope Manager
Duncan Campbell-Wilson, BSc *ANU*

Molonglo Technical Officers
Adrian Blake
Tim Hubbard
Greg Kingston

Emeritus Professors
Richard Edward Collins, BSc PhD *NY*
John Davis, BSc PhD *Mane*
Harry Messel, CBE, BSc *Qu* PhD *NUI*

Honorary Professors
David J H Cockayne, MSc *Melb* DPhil *Oxf*
Colin JR Sheppard, MA PhD *Camb* DSc *Oxf*
Barry S Thornton, AM, MSc PhD *NSW DSc*

Honorary Reader
Graham Derrick, BSc *Qld* PhD

Honorary Associate Professors
Rodney C Cross, PhD DipEd
Robert G Hewitt, PhD
Ian D S Johnston, BSc *Qld* PhD
Brian Mclnnes, BSc PhD *Qld*
Lawrence S Peak, PhD
Murray Winn, BSc PhD *Birm*

Honorary Senior Lecturers
Roy Allen, BSc PhD *Mane*
Ian M Bassett, MSc PhD *Melb*
G Fergus Brand, MSc *Otago* PhD
Neil F Cramer, BSc PhD
David F Crawford, BSc PhD
Ian S Falconer, MSc *NZ* PhD *ANU*
Bruce McAdam, MSc *NZ* PhD *Camb*
James B T McCaughan, MSc PhD
Rosemary Miller, BSc *Qld* MEd
Ian Sefton, MSc
Robert Shobbrook, BSc *StAnd* PhD
William J Tango, BSc *Calif PhD Colorado*
Anthony J Turtle, BA PhD *Camb*
Juris Ulrichs, PhD

Honorary Associates
Ara Asatryan, MSc *Yerevan State Uni* PhD *Mosc*
Andrew Bakich, MSc
Ian J Cooper, BSc MPhys DipEd *NSW*
Joss Bland-Hawthorn, BSc *AU Birm* PhD *Sus & RGO*
Lindsay C Botten, BSc *Tas* PhD
Michael Breakspear, BA BSc MBBS
Aliz Derekas
Graham Derrick, PhD
Pal Fekete, PhD
Simon Fleming, PhD
Robert Fletcher, DipEd *UTS* BSc MSc PhD
Catherine Foley, BSc DipEd *Macq* PhD
Parameswaran Hariharan
Julienne I Harnett, BA *Macq* DipT *Tas CAE* PhD
Kirsten Hogg
Stuart Jackson
David L Jauncey, PhD
Simon Johnston, BSc *Edin* PhD *Mane*
Tim Langtry, BS PhD *NSW MAppSc UTS*
Maryanne Large, BSc PhD *Dub*
Daniel Lavan
James K Lowry, BA *Richmond* MA *William & Mary* PhD *Cant*
Pamela McNamara, BSc *Swansea (Wales),* MSc *Sheff PhD Bangor (Wales)*
David R Mills, BSc PhD *NSW*
Graham Morrison, BE PhD *Melb*
Bhaskar Mukherjee, BE *Calc* MSc PhD *Technisch*
Andrew R Parker, BSc *JM Liv,* PhD *Macq*
John Piggot
Christopher Rennie, BSc *ANU* MBioEng *NSW*
Matthew Ryan
Michael Scholz, BSc *Tuebingen* MSc PhD *Hamburg*
Geoff Smith, MSc *Witw* PhD *NSW*
Michael Steel
Martin van Eijkelenborg
Mark J Wardle, MSc *Auck* PhD *Prin*
Michael White
Andrew Willes, BSc PhD
Kinwah Wu, BSc *HK* MSc PhD *Louisiana*
Qui-Chu Zhang

Physiology

Professors
Maxwell Richard Bennett, BE MSc PhD *Melb* DSc, FAA. Appointed 1983
David Grant Allen, BSc MB BS PhD *Lond.* Appointed 1989
Roger AL Dampney, PhD DSc. Appointed 1997
David I Cook, BSc(Med) MB BS MSc (the University of Sydney Medical Foundation Fellow). Appointed 1997
Brian J Morris, BSc *Adel* PhD *Monash* DSc. Appointed 1999

Associate Professors
Rebecca S Mason, MBBS PhD
Christopher O'Neill, BSc PhD *Newcastle (NSW)* (Clinical Associate Professor at Royal North Shore Hospital)
Paul Pilowsky, BMedSc BMBS PhD *Flin* (Principal Research Fellow at NHMRC)
Simon Carlile, BSc PhD

Senior Lecturers
William D Phillips, BSc PhD
Lynne J Cottee, BSc PhD (half-time & Research Officer)
Miriam Frommer, PhD *Lond* BSc
Margot Day, BSc PhD
Ann Goodchild, BSc PhD

Lecturers
Françoise Janod-Groves, BSc MSW/TMApplSc *UTS*
Catherine Leamey, BSc PhD
Meloni Muir, BSc *Purdue* PhD *McG*
Dario Protti, PhD *Buenos Aires*
Irene Schneider, BSc *NSW* MSc(Prelim)

Research Fellows
Anuwat Dinudom, MSc PhD - NHMRC
David Alais, PhD - ARC QEII Fellow

Postdoctoral Research Fellows
Guo Jun Liu, MD *Changchun China* PhD *Gifu Japan*
Andrea Markus, BSc PhD *Mainz (Germany)*
Fadi Charchar, BSc PhD - Howard Florey Centenary Research Fellow

Senior Research Officers
Jouji Horiuchi, BSc PhD *Yamanashi*
Vlado Buljan, PhD
Ramin Rohanizadeh, PhD

Permsak Komwatana, MS *MCV* PhD *UVa*
Yue-Kun Ju, MD *Xian* PhD *ANU*
Nicholas Whitehead
Elizabeth Millar, BSc
Angeles Sanchez-Perez, BSc PhD *Salamanca* - NHMRC
Qi-Jian Sun, BSc *China* PhD *ANU*
II Ha Lee, PhD
Helen Spiers, BSc PhD
Othon Gervasio, PhD

Research Officers
Wenbing Huang
Qun Li, MM *Shanghai* PhD
Christine Lucas, BSc PhD *NHHMRC*
Suzanne Killinger, BMedSc(Hons)
Helena Mangs, MSc *Karolinskalast, Sweden, Lie*
Lauren O'Mullane, BBiomedSc *Woll*
Margaret Streamer, PhD
Kachina Allen, BSc
Shivashni Deo

CJ Martin Fellows
David Adams, BSc *UTS* PhD *(Sanger Centre UK)*
Louise van der Weyden, BSc PhD *(Sanger Centre UK)*
Sam Solomon, BBiotech *Flin* PhD

Research Laboratory Staff
Judith O'Neill, RN BA(Health Sci-Nursing) *CSturt*

Class Laboratory Staff
John F Cossey, BTC *STC* - Senior Technical Officer (in-charge)
Adel Mitry, BVSc *Cairo* ACC *STC* - Senior Technical Officer

Electronics Workshop Staff
Vincent HW Cheung, HND *HK PolytechnicCEl* Part *2 UK*- Senior Technical Officer

Computing Staff
John WA Dodson, HNC *Lond* MIEEIE I Eng - Computer Network Manager
Li Jin
Joseph Pridham

Department Manager
Louise Loomes, BA GradDipAcctg

Administrative Officers
Louise Harrison
Lali Jo Jacob
David Lawrey

Honorary Professors
Anne Sefton
William (Liam) Burke
Paul Korner
Allan Snyder

Honorary Associate Professors
David F Davey, BSc MScMed PhD McG
Barry S Gow, MDS PhD, FRACDS

Honorary Senior Lecturer
Annick Ansselin, BA *Macq* MSc PhD

Honorary Associates
Joseph FY Hoh, PhD *ANU* BSc(Med) MBBS DSc
Philip Poronnik, PhD
Craig Jin, BSc *Stanford* MSc *Caltech* PhD
Anne Nelson, PhD
David le Couteur
Peter Maitz
Ainsley Marsh, BAdvSc
Elaine Mulcahy, PhD
William Wang, MM BS

Psychology

Head of School
Sally Andrews, BA PhD *NSW.* Appointed 2002

McCaughey Professor of Psychology
Robert Alan Boakes, BA *Cant* PhD *Harv.* Appointed 1989

Professor of Vestibular Function (Personal Chair)
Ian S Curthoys, BA PhD *Monash.* Appointed 1997

Professor of Clinical Psychology
Stephen W Touyz, BSc PhD *Cape TBSc Witw.* Appointed 1996

Professors
Alex Blaszczynski, MA PhD *NSW.* Appointed 2001
Phyllis Butow, MClinPsych *ANU PhD.* Appointed 2004

Associate Professors
David Grayson, BA PhD
Iain McGregor, MA *Oxf* PhD
Leanne Williams, BSSc BA PhD *NE*

Senior Lecturers
Bruce Burns, BSc *Melb* MA PhD *Calif*
Diana Caine, BA *NE* BSc MA *Melb* PhD
Colin Clifford, MA *Camb* MSc *Sussex* PhD *Lond*
Alan E Craddock, BA PhD
Irina Harris, BSc *NSW* MSc *Macq* PhD
Justin Harris, BSc PhD *NSW*
Pauline Howie, BA PhD *NSW*
Caroline Hunt, BSc MPsychol PhD *NSW*
David J Livesey, BSc PhD *WAust*
John M Predebon, BA PhD
Louise Sharpe, BA MPsych PhD *Lond*
Michael B Walker, BSc *UWA* BA *Adel* DPhil *Oxf*

Lecturers
Marie Abbott, BA MSc *WSyd* MClinPsych *Macq* PhD *NSW*
Damian Birney, BAppSc *USQ* PhD *UQ*
Margaret A Charles, BA PhD
Karen Croot, BA *Macq* PhD *Camb*
Anthony Grant, BA MA *Macq* PhD *Macq*
Fiona Hibberd, BA PhD
Ian Johnston, BSc PhD *NSW*
Sabina Kleitman, BA PhD
Sunny Lah, BA *Zagreb* MSc PhD *Macq*
Caleb Owens, BSc PhD *NSW*
Elizabeth Rieger, BA MClinPsychAtfWPhD
Tatjana Seizova-Cajic, MPsych *Belgrade* PhD *NSW*
Marianna Szabo, BA PhD *NSW*
Fiona White, BA PhD
Lisa Zadro, BSc PhD *NSW*

Associate Lecturers
Michael Cavanagh, BA MClinPsych PhD *Macq*
David Horry, BSc PhD *Macq*
Danielle Karazinov, BSc
Gerry Pallier, PhD
Serena Porges, BEd GradDip *Macq* MA *Columbia*
Pooja Sawrikar, PhD

Postdoctoral Research Officers
Derek Arnold, BPsych PhD *Macq*
John Bidewell, BSc MSc *NSW* PhD
Ann Burgess, PhD
Jennifer Cornish, BSc PhD *Monash*
Barbara Griffin, BPsych *Macq* PhD
Ilona Juraskova, BA MPsych PhD
Melanie Price, BSc PhD

Professional Officer
Sadhana Raju, BSc

Manager, Finance and Administration
Sandra Cheng, BBus *UTS* MCom, CPA

Manager, Teaching Administration
Anne Kwan, BA DipEd *CUHK*

Administrative Officers
Belinda Ingram, BSc
Rachel Moerman, BA

Administrative Assistants
Hwee-Thuan Chong, BCom *NSW,* CPA
Cindy Li, DipComSec *HKPU*
Keiko Narushima, BSc BA
Shamielah Toefy

Head of Computer and Technical Services
John Holden

Manager of Computer Services
Andrew Cartwright, BSc PhD

Computer Systems Officers
Ethel Harris, DipEd *Karlstad*
Nenad Petkovski, BSc EE *Belgrade*

Senior Technical Officers
Warren Davies
Raja Vijayenthiran

Animal House Manager
Darek Figa, DipAppSc(Animal Technology) *SIT MIAT UK*

Animal House Attendants
Deborah Brookes
Kerry Smith

Honorary Professor
Lazar Stankov, MA *Belgrade* PhD *Denver*

Honorary Associate Professors
Cyril R Latimer, BA PhD
Joel Michell, BA PhD

Honorary Senior Lecturers
Brian Crabbe, BA PhD
Olga Katchan, BA
Terence McMullen, BA PhD
Roslyn Markhan, BA MA PhD
George Oliphant, BA PhD
Richard Roberts, BA PhD
Alison M Turtle, MA

Honorary Clinical Senior Lecturers and Lecturers
Clive Allcock, BSc MBChB *Otago,* FRANZCP
Susan Ballinger, BA *Macq* PhD
Christopher Basten, BA *NSW MA* MClinPsych
Louise George, BSocSc MA *Durban* PhD *Surrey*
Nora Breen, BSc MClinPsych Melb
Sandra Heriot, BA *Wgtn* MA *Auck* PhD *Waikato*
Jean Hollis, MBBS(Hons), FRANZCP
David Kavanagh, BA MA PhD *Stan*
Anna Mandalis, BBehSc(Hons) MClinPsych PhD *LaTrobe*
Helen McCathie, BA MClinPsych PhD
Philomena Renner, BA MA *Dublin* PhD *Woll*
Paul Rhodes, BSc *Lane* MPsych PhD *Macq*
Reinhard Ronnebeck, BA *Mich* MA PhD *Houston*
Timothy Sharpe, BSc MPsych AttWPhD
Gillian Straker-Bryce, BA MClinPsych PhD *Wits*
Stephanie Whitmont, BA MPsych PhD

Honorary Associates
Elizabeth Allworth, BA *ANU* MPsych(Appl) *NSW* PhD *Macq*
Laurel Bornholt, BA *Melb* PhD *Macq*
Robyn Boyle, BA PhD *Macq*
Marita Brack, BA MPsych
Julie Braithwaite, BA MClinPsych *Macq*
Michael Breakspear, BSc BA MBBS PhD
Kerri Brown, PhD *Woll* MA
Carolyn M Cavana, BA *Auck* BA(Hons) MClinPsych *Well*
Anna Cohen, BA MPsych *Woll*
Carissa Coulston, BSc *ANU* MPsych
Angela Dixon, BSc *Melb* MA *Harv* MPsych
Rosemary Elliot, BA MPsych
Deborah A Finney, BSc MPsych PhD *NSW*
Paul Gertler, BSc *N'cle* MPsych
Andrew Kemp, BSc *Melb* PhD *Swinbourne*
Susan Kennedy, BSc MClinPsych *Macq*
Jae Lee, BSc MPsych *NSW*
Anna Mandalis, BBehSc MClinPsych PhD *LaTrobe*
Richard McBride, BSc MPsych *NSW*
Helen McCathie, BA MPsych PhD
Roderick Peter McDonald, DSc *Macq* PhD *NE* BA MSc
Matthew Norris, BA MPsych PhD
Alison O'Neill, BA MClinPsych
Nadine Reynolds, BA *Newcastle (NSW)* MPsych
Geraldine Robinson, BEd *Vic* MSc PhD *Loyola Baltimore*
Lesley Russell, BA *Newcastle (NSW)* MPsych
Louise Shepherd, BA MPsych
Caroline Stevenson, BSc *Sus* MPsych PhD
Jeanette Stewart, BSc *Sus* DClinPsych *Lond*
Katherine Stewart, BA MScClinPsych *Calif State*

Other units

Australian Key Centre for Microscopy and Microanalysis

Associate Professor and Director
Simon P Ringer, BAppSc *SA* PhD *NSW,* FIEAust

Associate Professors
Guy C Cox, MA DPhil *Oxf*
Filip Braet, PhD *Brussels*

Senior Lecturers
Allan S Jones, BAppSc *UTS* PhD *NSW*
Vicki J Keast, MS PhD *Lehigh* BSc

Lecturer
Lillian Soon, PhD

Research Associates
Judith Field, PhD
Karen Privat, PhD
Anya Salih, MSc *Khartoum* PhD
Dan Penny, PhD *Monash*
Pall Thordarson, BSc *Iceland* PhD
Zhaohui Han, PhD *UST China*
Andrei Reztsov, PhD *Moscow*
Timothy Petersen, PhD *RMIT*
Zhongwen Liu, PhD
Tomoyuli Honma, PhD

Associate Lecturers
Wendy Reade, BAppSc *Canberra* GDipAncientDoc *Macq* BA
Lisa Stadtmueller

Technical and Professional Staff
Eleanor P Kable, BSc *Griff* MSc *Qld* (Lab. Manager)
Rosie Hicks (General Manager)
Dennis M Dwarte, BSc AttWMSc
Ian J Kaplin, MSc PhD *NSW* BSc(CE)
Peter Hines, BME PhD
Miles Apperley, PhD *NSW*
Kyle Ratinac, PhD *Sydney*
Jouise Cole, PhD
Anne Simpson
Shaun Bulcock, MSc *Melb*
Adam Sikorski, MMechEng *Warsaw Tech Univ*
Anthony Romeo, BSc *Melb*
David Saxey, BSc BE *UWA*
Toshi Arakawa
Uli Eichhorn
Robert Mair
Bruno Melanie

Administrative Staff
Ronald Cheong
Ruth Fletcher

Centre for Research on Ecological Impacts of Coastal Cities

Director
Antony J Underwood, PhD DSc *Brist,* FAA FLS FIBiol FAIBiol CBiol

Deputy Directors
M Gee Chapman, BSc *Natal* MSc PhD
Arthur Dye, BSc PhD *Pt Eliz* MPhil *Stell*

Senior Research Fellows
Theresa Lasiak, BSc *Liv* PhD *Pt Eliz*

Postdoctoral Fellows
Richard Murphy, BSc *Lond* PhD *R'dg*
Craig Styan, BSc PhD *Adel* (U 2000 Research Fellow)
Trevor Tolhurst, BSc PhD *StAnd*

Senior Support Staff
Elizabeth Sakker, BSc PhD DipEd *NE* MEdAdmin *NSW*

Research Support Staff
David Blockley BSc(Hons)
Simon Gartenstein, BSc(Hons)
Sean Gaudron, BA
Andres Grigaliunas, BSc *Jorge Tadeo Colombia* GradDip(IntEnvManag) *Los Andes Colombia*
Penny Harrington, AdvCertAccounting AssocDip Welfare Work *TAFE*
Grant Kaplan, BAppSc *SCU*
Elena Lazzorotto, BAppSc(Hons) BSc(Hons) *Deakin*
Craig Myers, BSc(Hons)
Amy Palmer, BSc
Julie People BSc(Hons) GradDipEnvSc
Hwee Ying Pulford, BAppSc *RMIT*
Rene Reinfrank, BAppSc *Aust Maritime Coll*
Matthew Sage, BSc GradDipEnvSci

Honorary Appointments
Brian L Bayne, BSc PhD *Wales*
L Benedetti-Cecchi, PhD *Pisa*
K R Clarke, BSc PhD *Plymouth*
J S Gray, BSc *Lond* PhD *Wales*
Stephen J Kennelly, PhD DSc
M J Keough, BSc PhD *Adel*
G C B Poore, PhD *Cant*
R M Warwick, PhD DSc *Exe*

Coastal Studies unit

Director
Andrew D Short, MA *Hawaii* PhD *Louisana State* BA

Members
Eleanor M Bruce, PhD *WAust*
David E M Chapman, MEngSc *NSWBA* PhD
Peter J Cowell, BA PhD

Unit for History and Philosophy of Science

Director
Hans Pols, Drs *Groningen* MA *York* PhD *Penn*

Lecturers
Rachel A Ankeny, BA *St John's College* MA PhD *Pitt*
Ofer Gal, BA MA *Tel Aviv* PhD *Pitt*
Jason Grossman, MA *Cantab* MPH
Michael Selgelid, BSE *Duke* MA PhD *Cal San Diego*

Visiting Professors
Evelleen Richards, BSc *Qld* MA PhD *NSW*

Visiting Lecturer
Susan Hardy, BA PhD *NSW*

Administrative Assistant
Gail Stewart, BA GDipSecStudies

Research Officer
Fiona Mackenzie, BAppSc BSc(Hons)

Honorary Associates
Peter Anstey, BA (Hons) PhD *Sydney*
Alison Bashford, BA (Hons) PhD *Sydney*
David Braddon-Mitchell, BA PhD *ANU*
Alan Chalmers, BSc *Brist* MSc *Mane* PhD *Lond*
Stephen Garton, BA (Hons) *Sydney* PhD *NSW*
Stephen Gaukroger, BA *Lond* BA PhD *Cantab,* FAHA
Judith Godden, BA *UNE* PhD *Macq* DipEd *UNE*
Jason Grossman, BA MA *Cambridge* MPH
Julian Holland, BA DipMuseumStudies MScSoc
Ian Kerridge, BA BMedHons MPhil, FRACP FRCPA
Stephen Ross Leeder, BSc(Med) MB BS PhD, FRACP FFPHM FAFPHM
Roy MacLeod, AB *Harv* PhD *Cantab,* FAS FASSA FRHistS
John Miles Little, AM MD MS, FRACS
Gabrielle O'Sullivan, BSc *Dub* PhD *Lond*
Huw Price, BA *ANU MSc Oxf PhD Cantab,* FAHA

Key Centre for Polymer Colloids

Director
Robert G Gilbert, PhD *ANU* BSc, FAA FRACI CChem

Principal Research Fellow and Development Manager
Brian Hawkett, BSc DipEd PhD

Postdoctoral Research Fellows
Patrice Castignolles, PhD *Paris*
Hank De Bruyn, PhD
Marianne Gaborieau, PhD *Louis Pasteur*
Nirmesh Jain, BSc MSc PhD *SGU*
Siyabonga Mange, PhD *Stell*
Due Ngoc Nguyen, BSc *W.Syd.*
Thi Thuy Binh Pham, PhD MSc *Hanoi*
Ewan Sprong, PhD *Stell*

laboratory Manager
Reza Mahidasht, MEM *UTS* PhD *Belgrade*

Research Assistants
Hollie Zondanos

Senior Administrative and Finance Officer
Trisanti Santosa

Administrative Assistant
Patricia Matterson

Honorary Research Associates
Peter Hidi, MSc *Bud,* FRACI MIACIS
David Sangster, BSc(Hons), FRACI

University of Sydney Institute of Marine Science

Director
Ross Coleman, BSc (Hons) *Plymouth Polytechnic* PGCE PhD *Southampton*

Members
Gavin F Birch, MSc PhD GradDipIndAdmin *CapeTown*
Eleanor M Bruce, PhD *WAust*
Maria Byrne, BSc *Galway* PhD *VicBC*
John Carter, BE PhD
M Gee Chapman, BSc *Natal* MSc PhD
Peter J Cowell, BA PhD
Peter John Davies, BSc *Leic* PhD *Sheff.* Appointed 1991
Julie Dickinson, BSc MSc PhD
Adriana Dutkiewicz, PhD *Flin*
Arthur Dye, BSc PhD *Pt Eliz* MPhil *Stell*
Adrienne Grant, BSc PhD *ANU*
Rosalind T Hinde, BSc PhD
Thomas CT Hubble, MAppSc *NSW MSc* DipEd PhD
Michael Glen Hughes, BSc PhD
Ian Jones, BE AtfWPhD *Wat* MIEAust
Anthony WD Larkum, BSc *Lond* DPhil *Oxf,* ARCS
Adele Pile, BA *Boston* MA PhD *William & Mary*
Anya Salih, MSc *Khartoum* PhD
Andrew D Short, MA *Hawaii* PhD *Louisiana State* BA
Craig Styan, BSc PhD *Adel* (U 2000 Research Fellow)
Trevor Tolhurst, BSc PhD *StAnd*

Antony J Underwood, PhD DSc *Brist,* FAA FLS FIBiol FAIBiol CBiol
Stephen Williams, BASC *Waterloo* PhD

Honorary Associates
Philip Chappie, PhD
Douglas Cato, BSc MSc PhD
David Haddad, BSc DPhil *Oxf*
Alexa Troedson, BSc PhD
John You, PhD

Administrative Coordinator
Craig Barnes, BSc PhD GradDipEnvSci, MRACI

9. Scholarships

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

These tables contain simplified details of some of the prizes and scholarships offered by the University. Further information regarding scholarships is available from the university scholarships website (http://www.usyd.edu.au/scholarships) and from the Research Office website (http://www.usyd.edu.au/su/reschols/welcome.html).

Additional criteria are attached to each award below and for full details you are advised to consult the administering unit. In particular, requirements of sufficient merit or of a higher year enrolment in particular subjects or degrees are common. The University may not offer an award every year. The values of the awards are indicative only and may vary without notice.

The scholarships and prizes fall into two broad categories:

Prizes awarded on application - See the Scholarships Office and Research Office websites for more information. Applications usually close in September each year for the following year.

Prizes awarded automatically - Successful students are notified of these either by the Faculty or the Student Centre. Nearly all the prizes in these tables are awarded without application.

Undergraduate Prizes and Scholarships

Award	Value (p.a.)	Tenure (yrs)	Number	Brief Description
Scholarships awarded by the Faculty to students entering first year				
Science Alumni Entry Scholarship	$1000	5	4	Awarded to highly ranked University of Sydney Undergraduate Scholarship applicants who do not obtain one of those scholarships. Minimum UAI 98. These scholarships may not be held concurrently with a University of Sydney Scholarship for Outstanding Achievement.
Science Entry Scholarship	$4000	1	4	Awarded to highly ranked University of Sydney Undergraduate Scholarship applicants who do not obtain one of those scholarships. Minimum UAI 98. These scholarships may not be held concurrently with a University of Sydney Scholarship for Outstanding Achievement.
Science Alumni Achievement Scholarship	$1000	2	7	Awarded to highly ranked University of Sydney Undergraduate Scholarship applicants who do not obtain one of those scholarships. Minimum UAI 95. These scholarships may not be held concurrently with a University of Sydney Scholarship for Outstanding Achievement.
Faculty of Science Olympiad Scholarship	1 x $3000 then 3 x $1000	4	varies	Awarded to highly ranked University of Sydney Undergraduate Scholarship applicants who do not obtain one of those scholarships. Applicants must be medallists in an International Olympiad in Biology, Chemistry, Informatics, Mathematics or Physics. Minimum UAI 95. These scholarships may not be held concurrently with a University of Sydney Scholarship for Outstanding Achievement.
Biology Entry Scholarship	$2000	1L	2	Awarded automatically on the basis of academic merit in the HSC to intending BSc Biology majors. Cannot be held with other scholarships of equal or greater value.
Chemistry Entry Scholarship	$2000	1L	2	Awarded automatically on the basis of academic merit in the HSC to intending BSc Chemistry majors. Cannot be held with other scholarships of equal or greater value.
Environmental Science Entry Scholarship	$2000	1L	1	Awarded automatically on the basis of UAI to students entering the BSc (Environmental). Cannot be held with other scholarships of equal or greater value.
Geography Entry Scholarship	$2000	1L	1	Awarded automatically on the basis of academic merit in the HSC to intending BSc Geography majors. Cannot be held with other scholarships of equal or greater value.
Information Technology Entry Scholarship	$2000	1L	2	Awarded automatically on the basis of UAI to students entering the BSCT or BIT. Cannot be held with other scholarships of equal or greater value.
Liberal Studies Entry Scholarship	$2000	1L	1	Offered jointly by the Faculties of Arts and Science. Awarded automatically on the basis of UAI to students entering the BLibStud. Cannot be held with other scholarships of equal or greater value.
Mathematics Entry Scholarship	$2000	1L	2	Awarded automatically on the basis of academic merit in the HSC to intending BSc Mathematics majors. Cannot be held with other scholarships of equal or greater value.
Molecular Biology & Genetics Entry Scholarship	$2000	1L	1	Awarded automatically on the basis of UAI to students entering the BSc (Molecular Biology and Genetics). Cannot be held with other scholarships of equal or greater value.
Medical Science Entry Scholarship	$2000	1L	2	Offered jointly by the Faculties of Science and Medicine. Awarded automatically on the basis of UAI to students entering the BMedSc. Cannot be held with other scholarships of equal or greater value.
School of Physics Outstanding Achievement Scholarship	1 x $2000 then 3 x $1000	^1	1	Awarded automatically on the basis of academic merit in the HSC to intending BSc Physics majors. Cannot be held with other scholarships awarded by the Faculty of Science or University of Sydney.
Psychology Entry Scholarship	$2000	1L	2	Awarded automatically on the basis of UAI to students entering the BPsych. Cannot be held with other scholarships of equal or greater value.
Farrand Science Scholarships	$2500	1	11	Eleven scholarships for full time first year BSc students who have not undertaken previous tertiary study. Awarded automatically on the basis of academic merit in the HSC (or equivalent). May not be held with the Science Scholarship.

Liversidge Scholarship	$1000	3	2	Awarded automatically to the Chemistry student who, in the immediately preceding year, achieved the highest number of marks in HSC Chemistry.
Plumian Scholarship	$400	2	1	Awarded automatically for general proficiency at the HSC to a student enrolled in Biology, Geology or Geography in the candidate's first year.
Science Scholarships	$500	1	10	Awarded automatically to full time first year BSc students for academic merit in the HSC or equivalent and who have not previously enrolled in a degree course. May not be held with the Farrand Science Scholarship.
A.J. Shearsby Prize	$100	1	1	Awarded automatically to the Junior Geology student gaining the highest place in Earth and Environmental Science at the NSW HSC.
Scholarships and prizes awarded by the Scholarships Office to students entering first year in any faculty				
University of Sydney Scholarships Merit Award	$5000	5	50	Awarded on basis of application to the Scholarships Unit. Applications close 30 September in the year prior to enrolment. Selection based on academic merit and other achievements. Minimum UAI 95. For further information see www.usyd.edu.au/scholarships
University of Sydney Scholarships Entry Award	$5000	1	100	Awarded on basis of application to the Scholarships Unit. Applications close 30 September in the year prior to enrolment. Selection based on academic merit and other achievements. Minimum UAI 95. For further information see www.usyd.edu.au/scholarships
University of Sydney Scholarships for Outstanding Achievement	$5000	5	approx 35	Awarded to any student enrolling at the University of Sydney who scores a UAI of 100 or 99.95 in the NSW HSC or equivalent in the preceding year. For further information see www.usyd.edu.au/scholarships
University of Sydney Access Scholarships	$4000	5	approx 60	Access Scholarships assist new and continuing students who have been disadvantantaged in some way. They are available to students who have a competetive UAI and who also meet at least one of these criteria: financial disadvantage, disability or rural/remote area. Applications close 30 September. Apply through UAC - consult the UAC booklet or UAC website: www.uac.edu.au
Commonwealth Learning Scholarships	$2042 or $4084 (indexed)	4	approx 350	The Commonwealth Learning Scholarships program is a Commonwealth-funded scheme, open to undergraduate students at the University of Sydney. Applications close 30 September. Apply through UAC - consult the UAC booklet or UAC website: www.uac.edu.au
Bruton Educational Trust Scholarship	$10000	3	1	Scholarship to support candidate relocating from regional NSW to attend any degree at the University of Sydney. Awarded on the basis of the NSW HSC examination results, financial need and other criteria. Applications to the Scholarships Unit in the year preceding enrolment. For further information see www.usyd.edu.au/scholarships
BarkerScholarshipNo.III	$600	1	1	Awarded automatically after enrolment for proficiency in Mathematics in the HSC. Must enrol in 12 credit points of Mathematics in the Faculties of either Arts, Engineering or Science.
E. Trenchard Miller Memorial Scholarships	$1000	5	approx. 8	Awarded automatically after enrolment for general proficiency in the HSC.
G.C. Halliday Scholarship	$200	3	1	Awarded for general proficiency in the HSC to a Sydney Grammar School student enrolling into the faculties of Arts, Law, Science, or Engineering.
Horner Exhibition	$500	1	1	Awarded automatically after enrolment for proficiency in Mathematics at the HSC, to candidates in the faculties of Science, Arts or Engineering. Must enrol in 12 credit points of Mathematics.
Killeen Prize	$190	1	1	Awarded on the recommendation of the Principal of the Fort Street High School to a student proceeding from that school to the University.
John West Medal	$400	1	1	Awarded automatically after enrolment for general proficiency in the HSC.
Faculty prizes and scholarships for continuing students				
Bachelor of Liberal Studies (International) Travelling Scholarship	$2000	1	up to 3	Awarded annually to Bachelor of Liberal Studies (International) students proceeding overseas to participate in the University's Exchange Program. May not be held with a CHASS Student Travel Scholarship, a Chancellor's Committee Scholarship, an International Office Exchange Scholarship or an International Office Exchange Bursary.
Helen Beh Award for Citizenship	$350	1	1	Awarded annually to the Science student who has contributed most to the Faculty's non-academic activities and interests. May not be held with the Dean's Award for Citizenship.
Dean's Award for Citizenship	$100	1	varies	Awarded annually to the Science student who has contributed most to the Faculty's non-academic activities and interests. May not be held with the Helen Beh award.
Dean's Honour List		1		Students of the Faculty of Science (including students in the Bachelor of Liberal Studies) earn a place on the Dean's Honours List if they achieve a WAM at the High Distinction level over at least 48 credit points in the given academic year.
Dean's Honour List Prize	$500	1	3	Highest WAM of all candidates in Junior, Intermediate and Senior years of study who have attempted at least 48 credit points in the year.
Dean's Scholarship in Science	$3000	1	3	Awarded on basis of academic merit to candidates enrolled full time for courses offered by the Faculty who have completed between 2 and 6 semesters and are not holders of a University of Sydney Undergraduate Scholarship.
Brian Rawson Memorial Prize	$250	1	1	Most improved performance from Junior to Intermediate Science.
Science Achievement Prize	$500	1	1	Highest WAM for all units of study to a student completing the requirements for a Faculty degree in six semesters.
USA Foundation Scholarship for Women in Science	$800	1	1	The scholarship shall be awarded on merit to a woman who is a citizen or permanent resident of Australia enrolling into an honours program in the Faculty of Science at the University of Sydney.
Scholarships Office prizes and scholarships for continuing students				
University of Sydney Access Scholarships	$4000	5	approx 60	Access Scholarships assist new and continuing students who have been disadvantantaged in some way. They are available to students who have a competetive UAI and who also meet at least one of these criteria: financial disadvantage, disability or rural/remote area. Applications close 30 September. Apply through UAC - consult the UAC booklet or UAC website: www.uac.edu.au

Commonwealth Learning Scholarships	$2042 or $4084 (indexed)	4	approx 350	The Commonwealth Learning Scholarships program is a Commonwealth-funded scheme, open to undergraduate students at the University of Sydney. Applications close 30 September. Apply through UAC - consult the UAC booklet or UAC website: www.uac.edu.au
Continuing Undergraduate Scholarship	$5000	1	100	Awarded without application to continuing undergraduate students in any Faculty on the basis of merit.
Honours Scholarship	$5000	1	50	Awarded on the basis of merit or equity and merit to students enrolled in an honours program at the University of Sydney. Equity applications to the Scholarships Unit usually close at the end of March in the year of candidature.
International Office scholarships for continuing students				
International Merit Scholarship	1	up to 8	Half fee scholarships	awarded on academic merit to International students who have completed at least 36 credit points at the University of Sydney.
Scholarships and prizes awarded by Schools and Departments				
Anatomy and Histology				
J L Shellshear Memorial Prize	$120		1	Merit in practical Anatomy to a student in the Bachelor of Medical Science.
Grafton Elliot Smith Memorial Prize	$280		1	For merit in Anatomy to a Bachelor of Medical Science student.
J T Wilson Memorial Prize	$140		1	Proficiency in Neuroscience for a student in the Bachelor of Medical Science.
Biological Sciences				
Mary Besly Memorial Prize	$100		1	Merit in Intermediate or Senior invertebrate zoology.
lima Brewer Prize	$600		1	Excellence in botany or plant sciences honours.
G.S. Caird Scholarship in Botany	$650	1	1	Merit in Senior plant biology to a student proceeding to plant biology honours.
G.S. Caird Scholarship in Zoology	$650	1	1	Merit in Senior animal biology to a student proceeding to animal biology honours.
Eleanor Chase Memorial Prize	$200		1	Merit in Intermediate animal biology.
George Herbert Clarke Prize	$100		1	Merit in Intermediate plant morphology to a student born in Australia.
Collie Prize	$160		1	Awarded to the student enrolled in the Faculty of Science who obtains the highest aggregate mark for 12 credit points of Junior Biology.
William John Dakin Memorial Prize in Zoology	$250		1	For excellence in the subject of Zoology to a student gaining first class honours in Biology.
John H. Elliott Memorial Prize	$150			For merit in an honours thesis on animal biology.
Has well Prize	$120	1	Proficiency in 24	credit points of Senior zoology.
McGraw-Hill Prize for Academic Excellence in Biology	$250		4	Awarded annually in the form of a book voucher to the most proficient student in each of four streams in First Year Biology. These four streams are: Concepts in Biology, Ecosystems to Genes, Living Systems, and Human Biology.
E.N. (Ted) O'Reilly Memorial Prize	$275		1	Merit in Senior plant physiology.
Eva Saunders Memorial Prize	$60		1	To a female student for merit in Intermediate or Senior plant biology.
Slade Prize in Junior Biology	$80		1	For proficiency in Junior biology practicals.
Professor Spencer Smith-White Prize	$200		1	For merit in genetics honours.
Gabriella Wittman Prize	$140		1	Proficiency in Senior genetics.
Chemistry				
Arthur Hollis Memorial Prize	$150		1	For excellence in Intermediate Chemistry.
Australia-USA Foundation Prize	$250		1	Greatest improvement between Junior and Intermediate Chemistry.
C.H. Wilson Prize	$70		1	Highest grade in Organic Chemistry Honours.
Charles E. Fawsitt Prize	$120		1	Proficiency in Junior Chemistry.
Chemistry Summer Undergraduate Scholarship	varies	6 weeks	varies	This scholarship aims to encourage further study in chemistry and to provide experience in chemical research laboratory. Awarded on the basis of academic merit and an assessment of details provided on an application form to Australian citizens and permanent residents proceeding into Senior Chemistry.
Edna Maude Goulston Prize in Organic Chemistry	$275		1	Awarded annually to the Chemistry Honours student gaining the highest mark in the Organic coursework module, provided that the student's work is of sufficient merit.
Frank E. Dixon Scholarship	$650	1	1	Merit in Senior Chemistry for a student proceeding to Honours.
G.S. Caird Scholarships (in Chemistry)	$800	1	3	Merit in Senior Chemistry for a student proceeding to Honours.
Hush Prize in Theoretical Chemistry	$350		1	Merit in Senior Theoretical Chemistry for a student proceeding to Honours in Theoretical Chemistry.
Inglis Hudson Scholarships	lx$300 &2x $150	1	3	Merit in Senior Chemistry for a student proceeding to Organic Chemistry Honours.
Iredale Prize	$95		1	For merit in Intermediate Chemistry.
Janet Elspeth Crawford Prize In Chemistry	$1400		1	To a female graduate for merit in Chemistry Honours.
Levey Scholarship No. 2	$525	1	1	For merit in Junior Chemistry for a student proceeding to Intermediate Chemistry.
Levey Scholarship No. 3	$300	1	1	For merit in Junior Chemistry for a student proceeding to Intermediate Chemistry.
RJW Le Fevre-DAASN Rao Prize in Physical Chemistry	$350		1	For merit in Senior Physical Chemistry to the student entering Physical Chemistry Honours.
Slade Prize in Intermediate Chemistry Practical	$80		1	Awarded for proficiency in the practical component of both a Semester 1 and a Semester 2 Intermediate Chemistry unit of study.
Walter Burfitt Scholarship No 1	$750	1	1	Merit in Senior Chemistry to a student proceeding to Honours in Chemistry.

Geosciences				
AusEVIM: Charles Marshall Thesis Prize			1	Proficiency in Honours in a mining related field.
AusEVIM: Mining and Metallurgical Bursaries	$500 + $100 book voucher		1	Awarded annually by the New South Wales and ACT Branch of the Australian Institute of Mining and Metallurgy for the best intermediate, senior and honours students in a geoscience, mining or extractive metallurgical engineering department in NSW and the ACT. Application forms become available in March each year. Completed forms must be submitted to the Head of School of Geosciences by the end of April each year.
Olga Marian Browne Prize	$50		1	For merit in Intermediate Geology fieldwork.
G.S. Caird Scholarship (in Geography)	$650	1	1	For merit in Senior Geography.
Leo A. Cotton Prize in Exploration Geophysics	$80		1	For proficiency in Senior year studies in the field of Exploration Geophysics.
Deas-Thomson Scholarship in Mineralogy	$1000	1	1	For proficiency in Senior Geology to a student who proceeds to Honours in Geology and/or Geophysics.
Earth Resources Foundation First Year Scholarships	$600	1	4	Merit in first semester Junior Geology.
Earth Resources Foundation Second Year Scholarships	$800	1	4	For merit in Junior Geology to students proceeding to Intermediate Geology.
Earth Resources Foundation Third Year Scholarships	$1000	1	3	For merit in Intermediate Geology to students proceeding to Senior Geology and/or Geophysics.
Earth Resources Foundation Honours Year Scholarships	$1000	1	2	For merit in Senior Geology and/or Geophysics to students proceeding to honours in these areas.
Edgeworth David Prize for Palaeontology	$60		1	For proficiency in Senior palaeontology.
Elliston Medal	Medal		1	For proficiency in Geology Honours.
Edgar Ford Memorial Scholarship	$275	1	1	For proficiency in Senior Geography to the student who proceeds to Geography Honours.
Fugro Geophysics Prize	$1000		1	For proficiency in Senior Geophysics for a student proceeding to geophysics honours.
Geological Society of Australia Prize			1	For proficiency in Senior Geophysics for a student proceeding to geology honours. The prize consists of one year's student membership of the Geological Society of Australia and subscription to the Australian Journal of Earth Sciences.
Roy Lindseth Bursary	$180	1	1	Awarded to a candidate for a bachelor's degree enrolled in a unit of study or units of study in Geology and/or Geophysics who requires financial assistance to meet student expenses and who has demonstrated academic merit.
Jack Mahoney Memorial Prize	$90		1	Proficiency in the practical component of Junior Geology.
C.E. Marshall Scholarship	$525	1	1	Proficiency in Junior Geology to a student proceeding to Intermediate Geology.
Professor Griffith Taylor Prize	$100		1	Awarded to the woman student who gains the highest marks in the GEOG 1001 and 1002 examinations in the Faculty of Science.
Professor James Macdonald Holmes Prize	$100		1	Awarded to the degree student who gains the highest marks in the GEOG 1001 and 1002 examinations, provided the student's work is of sufficient merit.
WH. Maze Prize in Intermediate Geography	$250		1	Awarded to the most proficient student in two units of study from GEOG 2001, 2002, 2101, 2102, 2201 and 2202 if the student's work is of sufficient merit.
Rev. A.S. McCook Memorial Scholarship	$700	1	1	Awarded for merit in Senior Geography to a student proceeding to Geography or Geomorphology honours, to assist in the expenses for field work connected with the thesis.
Sheila Mitchell Swain Memorial Prize	$210		1	Awarded to the Senior Geology student who submits the best field report.
Quodling Testimonial Prize	$200		1	Awarded to a student in Senior Geology and/or Geophysics who has shown proficiency in petrology.
Ken Richards Memorial Scholarship	$1250	1	1	For an honours student with interest and aptitude in applied geosciences.
Slade Prize in Junior Geology Practical	$100		1	Proficiency in Junior Geology practicals.
Slade Prize in Intermediate Geology Practical	$80		1	Proficiency in Intermediate Geology practicals.
University Prize for Geology	$10		1	Awarded to the first year student who gains the highest marks in the class examination in Geology.
History and Philosophy of Science				
Dr G.A.M. Heydon Prize	$100		1	Merit in Intermediate History and Philosophy of Science.
Ian Langham Memorial Prize	$150		1	Merit in Senior History and Philosophy of Science.
Information Technologies				
Accenture Prize	$1000		1	The prize will be shared equally by the students in that group which is judged to have performed its project in ISYS3207 Information Systems Project at the highest professional standard.
Allan Bromley Prize	$500		1	Established in 2002 by the School of Information Technologies, Friends and Colleagues to commemorate the life and work of Associate Professor Allan Bromley, this prize is awarded annually to the student who achieves the highest mark for an Honours thesis, provided that the candidate's work is of sufficient merit.
G.S. Caird Scholarship (in Computer Science)	$650	1	1	Awarded for proficiency in Intermediate Computer Science. The scholar is required to attend Senior Computer Science during tenure of the scholarship.
CISCO Prize	$500		1	The prize will be awarded annually to the student with the best overall result in the Senior unit of study Networks & Distributed Systems.
Foundation for Information Technology Prizes	$300 and $200		2	One prize, valued at $300, shall be awarded annually to the most proficient student in Junior Computer Science and the other prize, valued at $200, shall be awarded to the next most proficient student, provided that the work is of sufficient merit.
Foundation for Information Technology Portfolio Entry Prizes	$300 and $250		2	Awarded annually to the two students who enrol in the BIT, BCST or BCST (Adv), who have submitted the highest quality portfolios of their programming work as an additional selection criterion. $300 (first prize), $250 (second prize).

Ian Jackson Memorial Prize	$50		1	Awarded for proficiency in Senior (Third year) Computer Science, provided that the work is of sufficient merit.
Information Technology Entry International Scholarship	$2000	1	2	Up to two Scholarships for first year international candidates for the BCST, BCST (Advanced) or BIT.
Professor John Rosenberg Prize for Excellence in Computer Science	$550		1	The prize will be awarded to the student with the most outstanding performance in Senior systems units of study.
Microsoft Research Asia Prize for Junior Software Development Projects	$250		1	Established in 2006 by a donation from Microsoft Research Asiathis prize is awarded annually to the students in that group which is judged to have produced the best system among those carried out in the first year programming unit, provided the work is of sufficient merit.
Microsoft Research Asia Prize for Multimedia Technologies	$500		1	Established in 2006 by a donation from Microsoft Research Asia, this prize is awarded annually to the student with the most outstanding performance in Senior units of study in the field of multimedia technologies, provided the work is of sufficient merit.
Microsoft Research Asia Prize for Senior Software Development Projects	$1000		1	Established in 2006 by a donation from Microsoft Research Asia, this prize is awarded annually to the students in that group which is judged to have produced the best system among those carried out in senior project units involving software development, provided the work is of sufficient merit.
Microsoft Research Asia Scholarship in IT	$5000	4	1	Established in 2005 by a donation from Microsoft Research Asia, the purpose of the scholarship is to encourage excellence in the field of information technology. The scholarship is open to all students enrolling in the Bachelor of Computer Science and Technology, Bachelor of Computer Science and Technology (Adv), or Bachelor of Information Technology degrees, and will be awarded based on academic merit, assessment of details provided on an application form, and performance in an interview. The scholarship holder shall be required, if selected, to take part in an industry placement at Microsoft Research Asia, Beijing.
Soprano Software Engineering Prize	$1000		1	Established in 2000 by the offer of an annual donation by Soprano Design Pty Ltd., the prize is to encourage excellence in software engineering. Each year the best Computer Science and/or Information Systems Honours students will be invited to present their projects to a committee comprising the Head of the School of Information Technologies and the Management Team of Soprano Design, provided their work is of sufficient merit. The prize shall be awarded to one of these students on the recommendation of the committee.
Marine Science				
Great Barrier Reef Research Foundation Telstra Country Wide Prize	$750	1	1	Awarded annually to the Bachelor of Science (Marine Science) student who has completed their degree requirements and who has obtained the highest grades in 12 to 18 credit points of NTMP units of study.
Prize in Marine Sciences	$100			Merit in Senior Marine Science
Mathematics and Statistics				
George Allen Scholarship	$400 each	1	3	Three scholarships: one to a student proceeding to honours in Applied Mathematics, one to a student proceeding to honours in Mathematical Statistics and one to a student proceeding to honours in Pure Mathematics, each one of whom has shown proficiency in at least 24 credit points of Senior units of study in the School of Mathematics & Statistics.
The MJ and M Ashby Prize for Mathematics in Science	$250		1	For the best essay, submitted by a student in the Faculty of Science, that forms part of the requirements of Pure Mathematics Honours, Applied Mathematics Honours or Mathematical Statistics Honours.
Applied Probability Trust Prize	$150		1	Awarded annually to the student enrolled in STAT3911 Stochastic Processes and Time Series who demonstrates the greatest proficiency.
Australian Federation of University Women (NSW) Prize in Mathematics	$100		1	Awarded to the most distinguished woman candidate for the degree of Bachelor of Arts or Bachelor of Science who graduates with first class honours in Applied Mathematics, Pure Mathematics or Mathematical Statistics.
Barker Prize	$375		1	Awarded at the fourth (honours) year examination for proficiency in Pure Mathematics, Applied Mathematics or Mathematical Statistics.
Barker Scholarship, No. I	$600	1	1	Awarded for proficiency in Intermediate Mathematics. The scholar is required to have attended 30 credit points of Senior units of study in the School of Mathematics and Statistics by the end of the year of the tenure of the scholarship.
Barker Scholarship, No. II	$600	1	1	Awarded for proficiency in Junior Mathematics. The scholar is required to attend 24 credit points of Intermediate units of study in the School of Mathematics and Statistics during the tenure of the scholarship.
Tim Brown Prize No. 1	$130		1	For proficiency in 12 credit points of Intermediate Statistics.
Tim Brown Prize No. 2	$210		1	For proficiency in 24 credit points of Senior Statistics.
K.E. Bullen Memorial Prize	$650		1	To the most proficient student in Applied Mathematics Honours.
K E Bullen Scholarships Nos. I & II	$1250	1	2	Proficiency in Senior Mathematics and Statistics to the student who enrol full-time in Applied Mathematics Honours.
K.E. Bullen Scholarship No III	$1000	1	1	Proficiency in Senior Mathematics and Statistics to the woman student who enrols full-time in Applied Mathematics Honours, provided that the candidate has not received any other K E Bullen Scholarship.
David G A Jackson Prize	$200		1	Awarded for creativity and originality in any undergraduate Pure Mathematics unit of study.
Joye Prize in Mathematics	$5300		1	To the most outstanding student completing fourth year Honours in Applied Mathematics, Pure Mathematics or Mathematical Statistics
Norbert Quirk Prizes	$130		4	For the best essay on a given mathematical subject by a student enrolled in a Junior, Intermediate, Senior and Honours units of study in Mathematics (Pure Mathematics, Applied Mathematics or Mathematical Statistics),
Veronica Thomas Prize	$100		1	For proficiency in General Statistical Methods

Thomson Learning Publishers Prize No.l	$125		l	Established in 1981 by the offer of Wadsworth Publishing Company (Australasia) to establish a prize for Junior Mathematics, this prize is awarded annually to a student for proficiency in Advanced level units of study in Junior Mathematics by the annual donation of a book voucher.
Thomson Learning Publishers Prize No.2	$125		l	Established in 1981 by the offer of Wadsworth Publishing Company (Australasia) to establish a prize for Junior Mathematics, this prize is awarded annually to a student for proficiency in normal level units of study in Junior Mathematics by the annual donation of a book voucher.
Medical Sciences				
Korner Prize	$100	1	l	Awarded for proficiency in the Intermediate year of the Bachelor of Medical Science degree.
Molecular and Microbial Biosciences				
Allman Prize	$300	1	l	Awarded annually to the student in the clinical stream of the Honours year in the BSc (Nutrition) who obtains the top aggregate mark in NUTR 4001 and NUTR 4002.
G.S. Caird Scholarship (in Biochemistry)	$650	1	l	Awarded for greatest proficiency in the units of study MBLG 2771 or MBLG 2871 and BCHM 2072/2972, provided that the student's work is of sufficient merit.
Roslyn Flora Goulston Prize	$530		l	Awarded for greatest proficiency in BCHM 3001/3901 and BCHM 3002/3004/3902/3904 to an undergraduate in science who intends proceeding to a BSc degree with honours in that subject.
Mannatech Australia Prize in Modern Metabolic Biochemistry	$ 1000		l	Established in 2005 by annual donation from Mannatech Australia, this prize is awarded annually by the School of Molecular and Microbial Biosciences to the student who attains the highest performance in their Honours year in the School, in the field of modern metabolic biochemistry, provided the work is of sufficient merit.
Sigma-Aldrich Molecular Biotechnology Second Year Award	$300	1	l	The award recognises the best overall grade performance in MOBT 2102 by a student enrolled in the BSc (Molecular Biotechnology) undergraduate degree. Students must receive a minimum Distinction average in this unit of study.
Sigma-Aldrich Molecular Biotechnology Third Year Award	$300	1	l	The award recognises the best overall grade performance in MOBT 3102 by a student enrolled in the BSc (Molecular Biotechnology) undergraduate degree. Students must receive a minimum Distinction average in this unit of study.
Slade Prize in Intermediate Biochemistry	$80		l	Awarded for proficiency in the units of study MBLG 2771/2871 and BCHM 2072/2972.
Neville Whiff en Scholarship	varies		l	Established in 2004 by a bequest left as a legacy to the Nutrition Research Foundation by Neville Whiffen US Medal of Freedom, FSTC FRSC FRACI FIE Aust FI ChemE FAIM who was a Life Governor of the Foundation, this scholarship is awarded annually or bi-annually by the Nutrition Research Foundation on the recommendation of the Head of the Human Nutrition Unit to a student in the Human Nutrition Unit to attend a conference in Australia or overseas.
Pharmacology				
Dorothy Thorp Prize in Science Communication	$200		1	Merit in Pharmacology Honours.
Roland H. Thorp Prize	$200		1	Merit in Senior Pharmacology.
Physics				
Australian Institute of Physics (N.S. W Branch) Prize in Physics	$200	1	To the student graduating with the degree of Bachelor of Science with Honours in Physics who shows greatest proficiency.	
Geoffrey Builder - AWA Prize	$250	1	1	Awarded annually to a student for proficiency in practical work in Intermediate Physics.
Walter Burfitt Scholarship No. II	$750		1	Awarded annually for proficiency in Senior Physics in the Faculty of Science.
Deas-Thomson Scholarship in Physics	$6500	1	1	To the student in either the Faculty of Arts or the Faculty of Science who demonstrates the greatest proficiency in Senior Physics, provided the student's work is of sufficient merit. The student is required to enrol in Physics Honours at the University.
Henry Chamberlain Russell Prize	$1400	1	1	Awarded for an essay, a thesis or research report on an astronomical subject written by a student enrolled for a degree within the University.
Levey Scholarship No. 1	$825	1	1	Awarded for proficiency in Junior Physics to a student in the Faculty of Arts, Science or Engineering who enrols in at least 12 credit points of Intermediate Physics.
Science Foundation for Physics Scholarships No. 1	$700	1	5	Up to five scholarships for proficiency in Junior Physics, provided that the student's work is of sufficient merit and that the student enrols in at least 12 credit points of Intermediate Physics.
Science Foundation for Physics Scholarships No. 2	$800	1	5	Up to five scholarships for proficiency in Intermediate Physics, provided that the student's work is of sufficient merit and that the student enrols in 24 credit points of Senior Physics.
Science Foundation for Physics Scholarships No. 3	$3000	1	5	Up to five scholarships for proficiency in Senior Physics, provided that the student's work is of sufficient merit and that the student enrols in Physics Honours.
Shiroki Prize	$500		1	Awarded to the student who submits the best project in Physics Honours provided the candidate's work is of sufficient merit.
School of Physics Honours Scholarship	$3000	1	1	Awarded to a student who has completed a major in Physics or equivalent and has achieved a result of at least Distinction in Senior Physics.
School of Physics - Julius Sumner Miller Scholarships for Academic Excellence No. 1	$700	1	2	To the most proficient students in Junior Physics provided that their work is of sufficient merit and they enrol in at least 12 credit points of Intermediate Physics.
School of Physics - Julius Sumner Miller Scholarships for Academic Excellence No. 2	$800	1	2	To the most proficient students in Intermediate Physics provided that their work is of sufficient merit and they enrol in 24 credit points of Senior Physics.
School of Physics - Julius Sumner Miller Scholarships for Academic Excellence No. 3	$3000	1	2	To the most proficient students in Senior Physics provided that their work is of sufficient merit and they enrol in Physics Honours.
Slade Prize in Intermediate Physics	$350		1	Proficiency in Intermediate Experimental Physics.
Smith Prize	$200		1	Awarded to the best undergraduate in Junior Experimental Physics.
W.I.B. Smith Prize	$300	1	Awarded to the student who best combines the characteristics of experimental skill, proficiency and exceptional motivation in the Senior laboratory classes.	

Malcolm Turki Memorial Scholarship	$1500	1	1	To encourage and assist an outstanding student within the School of Physics in the completion of Physics Honours who might not otherwise be able to do so due to insufficient financial support.
Physiology				
Claude Bernard Prize	$150		1	Proficiency in PHSI 3003/3903.
Colin Dunlop Prize	$100		1	Merit in Physiology Honours.
Frank Cotton Memorial Prize	$250		1L	For merit in PHSI 3004 Human Cellular Physiology or PHSI 3904 Human Cellular Physiology (Advanced)
Y E Knight Neuroscience Essay Prize	$100		1L	For the best essay or report in PHSI 3001/3901.
David J. Monk Adams Award	$600		1L	Travel assistance for a student enrolled in Physiology Honours.
Psychology				
Australian Psychological Society Prize in Psychology	$200		1	For distinction in Psychology Honours. As well as the cash prize, the winner will have the opportunity to present a paper to the annual APS conference, with substantial costs covered.
Blanka Buring Prize	$400		1	Awarded to the student enrolled in Arts who demonstrates the greatest proficiency in a minimum of 32 credit points of Psychology 3000 level units of study.
Dick Champion Prize	$200		1L	Awarded to the Psychology 4 Honours student who presents the best Empirical Thesis in the areas of learning or motivation, providing the thesis is of sufficient merit.
Dick Thomson Prize	$200		1L	Awarded to the best student in Psychology Honours, provided the performance is of sufficient merit.
Frank Albert Prize in Psychology	$200		1	For merit in Intermediate Psychology.
Lithgow Scholarship No. V	$1000	1	1L	Awarded for proficiency in Psychology 1001 and 1002. The scholar is required to attend PSYC 2111 and 2112, PSYC 2113 and 2114.
Lithgow Scholarship No. VI	$1000	1	1L	Awarded for proficiency in PSYC 2011 and 2012, PSYC2013 and 2014. The scholar is required to attend a minimum of 32 credit points of Psychology 3000 level units of study.
Lithgow Scholarship No. VII	$1000	1	1	Awarded for proficiency in a minimum of 32 credit points of Psychology 3000 level units of study. The scholar is required to attend Fourth Year Psychology (Honours or GDS).
O'Neil Prize in Psychology 4 Honours	$200		1L	The prize may be awarded to the student who shows greatest proficiency in the theoretical thesis in Psychology Honours.
Winifred O'Neill Sydney University Undergraduate Scholarship	$2500	Up to 3	1	For full-time students in Psychology who achieve the best results in the first or second years of study in Psychology, and who enrol in either 16 credit points of intermediate or 32 credit points of senior units of study in Psychology in the following year. Preference is to be given to students who are blind or who are visually impaired. The scholarship may be awarded to a student who has a different disability.
Westmead Institute for Cancer Research				
WICR Scholarship	$5000	1		Awarded by application following advertisement to the Westmead Institute for Cancer Research to an Honours student in the Bachelor of Science or Bachelor of Medical Science undertaking cancer research. Applications close with the Director, Westmead Institute for Cancer Research, Westmead Hospital on 30 September each year.

Prize compositions

Details of these may be obtained from the Scholarships Office with which applications generally close in the third week of second semester.

Bursaries

Bursaries are awarded on the combined grounds of financial need and academic merit. Applications to the Financial Assistance Office usually close at the end of April.

Postgraduate Prizes and Scholarships

Research Office

Postgraduate and intending postgraduate research students are advised to consult the Research Office Web site (http://www.usyd.edu.au/su/reschols/welcome.html) for comprehensive information on a wide range of scholarships available.

Postgraduate Travelling Scholarships

Each year the University offers five or six travelling scholarships with a closing date in March. Generally, applicants need to have a first class Honours degree approaching medal standard to be considered.

Applications for the major travelling scholarships offered by external bodies generally close in August or September. All postgraduate scholarships are advertised in the Bulletin Board, which is available in departments or from the Research Office in the Main Quadrangle.

Award	Value (p.a.)	Tenure (yrs)	Number	Brief Description
Scholarships and prizes awarded by the University				
Australian Postgraduate Awards (APAs)	$18837	3.5 max	varies	For local students enrolling into a higher research degree at the University. Applications close 31 October each year. Applications from the Research Office or web site: http://www.usyd.edu.au/su/reschols/welcome.html.

University of Sydney Postgraduate Awards (UPAs)	Same as APA	3.5 max	varies	For local students enrolling into a higher research degree at the University. Applications close 31 October each year. Applications from the Research Office or web site: http://www.usyd.edu.au/su/reschols/welcome.html.
Henry Chamberlain Russell Prize	$1400	1	1	Essay, thesis or research report on Astronomy.
Scholarships awarded by the International Office				
International Postgraduate Research Scholarships		up to 3	approx 25	For International students enrolling into a higher research degree at the University. Applications open between 1 May and 31 August each year. Scholarship covers tuition fees, a living allowance of approx. $16,700 p.a. and health cover. Application forms from the International Office.
Scholarships and prizes awarded by Faculty, Schools and Departments				
Biological Sciences				
Jabez King Heydon Memorial Prize	$700		1	For the most meritorious PhD in the preceding 12 months in the School of Biological Sciences.
Postgraduate Excellence Prize in Biological Sciences	$500-$3000			For research students in the School of Biological Sciences. Awarded after application and seminar to the student who best communicates the aims of their research, its contribution to its field and its likelihood of timely completion.
Chemistry				
Agnes Campbell Prizes	Varies			For excellence in Organic Chemistry in either an honours year or in a research Masters or PhD.
John A Lamberton Research Scholarships	Varies	1	varies	Awarded to a meritorious candidate for the degree of Doctor of Philosophy of Master of Science in the area of natural products.
C.G. and R.J.W. Le Fevre Postgraduate Student Lectures	$130		up to 3	Awarded to postgraduate students of Chemistry on the recommendation of the Council of the Sydney University Chemistry Society.
Dr Joan R Clark Research Scholarship	Varies	0.5	1	Awarded to a PhD student in Inorganic Chemistry to assist with costs of travel and subsistence while pursuing their research at a leading overseas university for a period of between 6 and 26 weeks.
George Harris Scholarships	$1200	1	1	Awarded to a meritorious candidate for the degree of Doctor of Philosophy in Chemistry.
RJW Le Fevre Research Travelling Scholarship	$2500		1	Assists an outstanding female postgraduate research student to present a paper or poster at a major international conference.
Surface Coatings Association Australia Scholarship	$1500	1	1	Awarded to a meritorious candidate for the degree of Doctor of Philosophy or Master of Science in the area of surface coatings (including pigments, polymers, corrosion, weathering, adhesion and methods of manufacture).
Faculty of Science				
John Coutts Scholarship	$2750	3	1	Awarded to the top Honours student in the Faculty of Science proceeding to postgraduate study at the University the following year.
Science Centenary Fund Scholarship	$2500	1	1	Awarded to the Honours student from the Faculty of Science who is ranked highest over four years and proceeds to a postgraduate research degree in the Faculty.
Geosciences				
Deas-Thomson Scholarship in Geology	$6500	1	1	For proficiency in Geology Honours to the student who proceeds to postgraduate study with the School of Geosciences.
George Harris Scholarships	$1200	1	1	Awarded to a candidate for the degree of Doctor of Philosophy in Geology and Geophysics.
L. A. Richardson Memorial Prize	$3000		1	For the most outstanding thesis in the field of exploration geophysics in either Geophysics Honours or Geology Honours by a student who enrols as a full-time research student in the following year.
School of Information Technologies				
Master of Information Technology Half-fee Semester Scholarship	Varies		varies	A limited number of One Semester Half-Fee Scholarships are available to new students commencing full-time studies in the MIT and MITM courses in 2006. The scholarships are awarded on the basis of academic merit. Students are assessed on their academic performance in their first full-time semester in the MIT or MITM course. Those students selected for a Scholarship will receive an amount equivalent to 50% of the tuition fee for their second full-time semester of study in the MIT or MITM.
Mathematics and Statistics				
T G Room Medal	Medal		1	For a PhD thesis in Pure Mathematics which is considered of outstanding merit.
Molecular and Microbial Biosciences				
Beckman-Coulter Molecular Biotechnology Postgraduate Award	$1000	1	1	For the best overall grade performance by a postgraduate student enrolled in MOBT 5101 and MOBT 5102.
The Jo Rogers Memorial Prize	Varies		1	Awarded annually to the top student in the final year of the Master of Nutrition and Dietetics course at the University of Sydney.
Bruce Veness Chandler Research Support Scholarship in Food Chemistry No.2	varies	varies		Established in 2004 by a bequest from the residual estate of Bruce Veness Chandler, this scholarship provides funding for research support for postgraduate or post-doctorate candidates working in the field of Food Chemistry applied to any aspect of food. Applicants must submit a proposal setting out the details of the research support sought and its importance to the applicant's research.
Physics				
Denison Bridging Award	same as APA	6 months	1	Established in 2002 by the School of Physics, the purpose of the award is to provide a six-month living allowance to full-time PhD students commencing mid-year in the School of Physics at the University of Sydney. Applicants must meet the eligibility conditions for the Australian Postgraduate Award/University of Sydney Postgraduate Award (APA/UPA), and must apply for an APA/UPA in their first semester of candidature.
Denison Postgraduate Award	same as APA	3	1	To the most academically-able new PhD student who has met eligibility criteria for the APA/UPA awards. Scholarship holders must be enrolled for a full time Doctoral postgraduate research degree at the University of Sydney.

Denison Postgraduate Conversion Award	same as APA	3	1	Established in 2004 by the School of Physics, the purpose of the award is to provide a living allowance to recently upgraded full-time PhD students undertaking research in the School of Physics. Applicants must not be eligible for the Australian Postgraduate Award (APA), University Postgraduate Award or the Denison Postgraduate Award (DPA), must have been previously enrolled in the MSc by research in the School of Physics, in the year prior to application, and must have made a formal application to the Faculty of Science for an upgrade to PhD candidature.
Denison Merit Award	same as APA	3.5	1	Scholarship holders must be enrolled for a full time Doctoral postgraduate research degree at the University of Sydney.
International Denison Postgraduate Award	same as APA	2-3	1	Established in 2005 by the School of Physics, the purpose of the award is to provide a living allowance to international students who are undertaking full-time research towards a Masters or PhD in Physics. The award may be offered to incoming international research students with a first class honours degree, or equivalent. Applicants must make a formal application to the School using the advertised contact details.
Relocation Scholarship	Up to $3000 each		varies	Scholarship holders must be enrolled to for a Doctoral postgraduate research degree with their primary supervisor in the School of Physics,
Psychology				
Lucy Firth Sydney University Postgraduate Scholarship	$10000	3	1	Scholarship holders must be enrolled for a full time Doctoral postgraduate research degree at the University of Sydney. They must be Australian citizens or permanent residents with a Class 1 or high Class II Honours degree.
A.H. Martin Scholarship	$550	1	1	Awarded to the candidate for the degree of Doctor of Clinical Psychology who performs best in Part I of the course, preferably in the fields of vocational guidance and vocational selection or a related field.
Martin and Elizabeth Jane Simmat Prize No 1	$350		1	The prize shall be awarded to the candidate most distinguished in meeting requirements for the award of the Graduate Diploma in Science (Psychology).
Martin and Elizabeth Jane Simmat Prize No.2	$350		1	Awarded to the student with the best performance in Part II of the Doctor of Clinical Psychology course.
Margaret Stewart Fund Scholarship	Same as APA	up to 4	1	The scholarship is open to suitably qualified graduates in Psychology of the University of Sydney or any other university who wish to undertake research into ethics and behaviour, towards a higher degree.
School of Psychology Prize for Year 3 DCP/DCN	300		1	This prize is awarded annually to the candidate who performs best across the group of students enrolled in either the Doctor of Clinical Psychology or Doctor of Clinical Neuropsychology in year 3, provided the performance is of sufficient merit.
H. Tasman Lovell Memorial Medallion	Medal		1	The medallion is awarded to the candidate who submits the best thesis for the degree of Doctor of Philosophy in the School of Psychology, provided the thesis is of sufficient merit.
Winifred O'Neill Sydney University Undergraduate Scholarship	2500	1-3	1	Established in 1997 from the estate of Dr Gregory John Lamb O'Neill who was a medical practitioner in Chatswood, NSW, this scholarship is open to full-time postgraduate students in Psychology at the University of Sydney and will be based on meritorious performance in Undergraduate Psychology. Preference is given to students who are visually impaired or, if there is no visually impaired applicant, to students with other disability.

University of Sydney (Coursework) Rule 2000 (as amended)

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

Approved by: Senate on 4 December 2000
Date of effect: 1 January 2001

Latest amendment approved by: Senate on 3 December 2001
Date of effect: 1 January 2002

University of Sydney (Coursework) Rule 2000 (as amended)

Preliminary

1. Commencement and purpose of Rule

(1) This Rule is made by the Senate pursuant to section 37(1) of the University of Sydney Act 1989 for the purposes of the University of Sydney By-law 1999.

(2) This Rule comes into force on 1 January 2001.

(3) This Rule governs all coursework award courses in the University. It is to be read in conjunction with the University of Sydney (Amendment Act) Rule 1999 and the Resolutions of the Senate and the faculty resolutions relating to each award course in that faculty.

Rules relating to coursework award courses

1. Definitions

In this Rule:

award course means a formally approved program of study which can lead to an academic award granted by the University.

coursework means an award course not designated as a research award course. While the program of study in a coursework award course may include a component of original, supervised research, other forms of instruction and learning normally will be dominant. All undergraduate award courses are coursework award courses.

credit means advanced standing based on previous attainment in another award course at the University or at another institution. The advanced standing is expressed as credit points granted towards the award course. Credit may be granted as specific credit or non-specific credit.

specific credit means the recognition of previously completed studies as directly equivalent to units of study;

non-specific credit means a "block credit" for a specified number of credit points at a particular level. These credit points may be in a particular subject area but are not linked to a specific unit of study; and

credit points means a measure of value indicating the contribution each unit of study provides towards meeting award course completion requirements stated as a total credit point value.

dean means the dean of a faculty or the director or principal of an academic college or the chairperson of a board of studies.

degree means a degree at the level of bachelor or master for the purpose of this Rule.

embedded courses/programs means award courses in the graduate certificate/graduate diploma/master's degree by coursework sequence which allow unit of study credit points to count in more than one of the awards.

faculty means a faculty, college board, a board of studies or the Australian Graduate School of Management Limited as established in each case by its constitution and in these Rules refers to the faculty or faculties responsible for the award course concerned.

major means a defined program of study, generally comprising specified units of study from later stages of the award course.

minor means 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.

postgraduate award course means an award course leading to the award of a graduate certificate, graduate diploma, degree of master or a doctorate. Normally, a postgraduate award course requires the prior completion of a relevant undergraduate degree or diploma.

research award course means an award course in which students undertake and report systematic, creative work in order to increase the stock of knowledge. The research award courses offered by the University are: higher doctorate, Doctor of Philosophy, doctorates by research and advanced coursework, and certain degrees of master designated as research degrees. The systematic, creative component of a research award course must comprise at least 66 per cent of the overall award course requirements.

stream means a defined program of study within an award course, which requires the completion of a program of study specified by the award course rules for the particular stream, in addition to the core program specified by award course rules for the award course.

student means a person enrolled as a candidate for a course.

testamur means a certificate of award provided to a graduate, usually at a graduation ceremony.

transcript or **academic transcript** means a printed statement setting out a student's academic record at the University.

unit of study means the smallest stand-alone component of a student's award course that is recordable on a student's transcript. Units of study have an integer credit point value, normally in the range 3-24.

undergraduate award course means an award course leading to the award of an associate diploma, diploma, advanced diploma or degree of bachelor.

2. Authorities and responsibilities

(1) Authorities and responsibilities for the functions set out in this Rule are also defined in the document *Academic Delegations of Authority*. The latter document sets out the mechanisms by which a person who has delegated authority may appoint an agent to perform a particular function.

(2) The procedures for consideration of, and deadlines for submission of, proposals for new and amended award courses will be determined by the Academic Board.

Division 1: Award course requirements, credit points and assessment

3. Award course requirements

(1) To qualify for the award of a degree, diploma or certificate, a student must:

(a) complete the award course requirements specified by the Senate for the award of the degree, diploma or certificate concerned;

(b) complete any other award course requirements specified by the Academic Board on the recommendation of the faculty and published in the faculty resolutions relating to the award course;

(c) complete any other award course requirements specified by the faculty in accordance with its delegated authority

and published in the faculty resolutions relating to the award course; and

(d) satisfy the requirements of all other relevant by-laws, rules and resolutions of the University.

4. Units of study and credit points

(1)

(a) A unit of study comprises the forms of teaching and learning approved by a faculty. Where the unit of study is being provided specifically for an award course which is the responsibility of another faculty, that faculty must also provide approval.

(b)Any faculty considering the inclusion of a unit of study in the tables of units available for an award course for which it is responsible may review the forms of teaching and learning of that unit, may consult with the approving faculty about aspects of that unit and may specify additional conditions with respect to inclusion of that unit of study.

(2) A student completes a unit of study if the student:

(a) participates in the learning experiences provided for the unit of study;

(b) meets the standards required by the University for academic honesty;

(c) meets all examination, assessment and attendance requirements for the unit of study; and

(d) passes the required assessments for the unit of study.

(3) Each unit of study is assigned a specified number of credit points by the faculty responsible for the unit of study.

(4) The total number of credit points required for completion of an award course will be as specified in the Senate resolutions relating to the award course.

(5) The total number of credit points required for completion of award courses in an approved combined award course will be specified in the Senate or faculty resolutions relating to the award course.

(6) A student may, under special circumstances, and in accordance with faculty resolutions, be permitted by the relevant dean to undertake a unit or units of study other than those specified in the faculty resolutions relating to the award course and have that unit or those units of study counted towards fulfilling the requirements of the award course in which the student is enrolled.

5. Unit of study assessment

(1) A student who completes a unit of study will normally be awarded grades of high distinction, distinction, credit or pass, in accordance with policies established by the Academic Board. The grades high distinction, distinction and credit indicate work of a standard higher than that required for a pass.

(2) A student who completes a unit of study for which only a pass/fail result is available will be recorded as having satisfied requirements.

(3) In determining the results of a student in any unit of study, the whole of the student's work in the unit of study may be taken into account.

(4) Examination and assessment in the University are conducted in accordance with the policies and directions of the Academic Board.

6. Attendance

(1) A faculty has authority to specify the attendance requirements for courses or units of study in that faculty. A faculty must take into account any University policies concerning modes of attendance, equity and disabled access.

(2) A faculty has authority to specify the circumstances under which a student who does not satisfy attendance requirements may be deemed not to have completed a unit of study or an award course.

Division 2: Enrolment

7. Enrolment restrictions

(1) A student who has completed a unit of study towards the requirements of an award course may not re-enrol in that unit of study, except as permitted by faculty resolution or with the written permission of the dean. A student permitted to re-enrol may receive a higher or lower grade, but not additional credit points.

(2) Except as provided in subsection (1), a student may not enrol in any unit of study which overlaps substantially in content with a unit that has already been completed or for which credit or exemption has been granted towards the award course requirements.

(3) A student may not enrol in units of study additional to award course requirements without first obtaining permission from the relevant dean.

(4) Except as prescribed in faculty resolutions or with the permission of the relevant dean:

(a) a student enrolled in an undergraduate course may not enrol in units of study with a total value of more than 32 credit points in any one semester, or 16 credit points in the summer session; and

(b) a student enrolled in a postgraduate award course may not enrol in units of study with a total value of more than 24 credit points in any one semester, or 12 credit points in the summer session.

Division 3: Credit, cross-institutional study and their upper limits

8. Credit for previous studies

(1) Students may be granted credit on the basis of previous studies.

(2) Notwithstanding any credit granted on the basis of work completed or prior learning in another award course at the University of Sydney or in another institution, in order to qualify for an award a student must:

(a) for undergraduate award courses, complete a minimum of the equivalent of two full-time semesters of the award course at the University; and

(b) for postgraduate award courses, complete at least 50 per cent of the requirements prescribed for the award course at the University.

These requirements may be varied where the work was completed as part of an embedded program at the University or as part of an award course approved by the University in an approved conjoint venture with another institution.

(3) The credit granted on the basis of work completed at an institution other than a university normally should not exceed one third of the overall award course requirements.

(4) A faculty has authority to establish embedded academic sequences in closely related graduate certificate, graduate diploma and master's degree award courses. In such embedded sequences, a student may be granted credit for all or some of the units of study completed in one award of the sequence towards any other award in the sequence, irrespective of whether or not the award has been conferred.

(5) In an award course offered as part of an approved conjoint venture the provisions for the granting of credit are prescribed in the Resolutions of the Senate and the faculty resolutions relating to that award course.

9. Cross-institutional study

(1) The relevant dean may permit a student to complete a unit or units of study at another university or institution and have that unit or those units of study credited to the student's award course.

(2) The relevant dean has authority to determine any conditions applying to cross-institutional study.

Division 4: Progression

10. Repeating a unit of study

(1) A student who repeats a unit of study shall, unless granted exemption by the relevant dean:

(a) participate in the learning experiences provided for the unit of study; and

(b) meet all examination, assessment and attendance requirements for the unit of study.

(2) A student who presents for re-assessment in any unit of study is not eligible for any prize or scholarship awarded in connection with that unit of study without the permission of the relevant dean.

11. Time limits

A student must complete all the requirements for an award course within ten calendar years or any lesser period if specified by resolution of the Senate or the faculty.

Division 5: Discontinuation of enrolment and suspension of candidature

12. Discontinuation of enrolment

(1) A student who wishes to discontinue enrolment in an award course or a unit of study must apply to the relevant dean and will be presumed to have discontinued enrolment from the date of that application, unless evidence is produced showing:
(a) that the discontinuation occurred at an earlier date; and
(b) that there was good reason why the application could not be made at the earlier time.

(2) A student who discontinues enrolment during the first year of enrolment in an award course may not re-enrol in that award course unless:
(a) the relevant dean has granted prior permission to re-enrol; or
(b) the student is reselected for admission to candidature for that course.

(3) No student may discontinue enrolment in an award course or unit of study after the end of classes in that award course or unit of study, unless he or she produces evidence that:
(a) the discontinuation occurred at an earlier date; and
(b) there was good reason why the application could not be made at the earlier time.

(4) A discontinuation of enrolment may be recorded as "Withdrawn (W)" or "Discontinued Not To Count As Failure (DNF)" where that discontinuation occurs within the time-frames specified by the University and published by the faculty, or where the student meets other conditions as specified by the relevant faculty.

13. Suspension of candidature

(1) A student must be enrolled in each semester in which he or she is actively completing the requirements for the award course. A student who wishes to suspend candidature must first obtain approval from the relevant dean.

(2) The candidature of a student who has not re-enrolled and who has not obtained approval from the dean for suspension will be deemed to have lapsed.

(3) A student whose candidature has lapsed must apply for re-admission in accordance with procedures determined by the relevant faculty.

(4) A student who enrols after suspending candidature shall complete the requirements for the award course under such conditions as determined by the dean.

Division 6: Unsatisfactory progress and exclusion

14. Satisfactory progress

A faculty has authority to determine what constitutes satisfactory progress for all students enrolled in award courses in that faculty, in accordance with the policies and directions of the Academic Board.

15. Requirement to show good cause

(1) For the purposes of this Rule, "good cause" means circumstances beyond the reasonable control of a student, which may include serious ill health or misadventure, but does not include demands of employers, pressure of employment or time devoted to non-University activities, unless these are relevant to serious ill health or misadventure. In all cases the onus is on the student to provide the University with satisfactory evidence to establish good cause. The University may take into account relevant aspects of a student's record in other courses or units of study within the University and relevant aspects of academic studies at other institutions provided that the student presents this information to the University.

(2) The relevant dean may require a student who has not made satisfactory progress to show good cause why he or she should be allowed to re-enrol.

(3) The dean will permit a student who has shown good cause to re-enrol.

16. Exclusion for failure to show good cause

The dean may, where good cause has not been established:

(1) exclude the student from the relevant course; or

(2) permit the student to re-enrol in the relevant award course subject to restrictions on units of study, which may include, but are not restricted to:
(a) completion of a unit or units of study within a specified time;
(b) exclusion from a unit or units of study, provided that the dean must first consult the head of the department responsible for the unit or units of study; and
(c) specification of the earliest date upon which a student may re-enrol in a unit or units of study.

17. Applying for re-admission after exclusion

(1) A student who has been excluded from an award course or from a unit or units of study may apply to the relevant dean for re-admission to the award course or re-enrolment in the unit or units of study concerned after at least four semesters, and that dean may readmit the student to the award course or permit the student to re-enrol in the unit or units of study concerned.

(2) With the written approval of the relevant dean, a student who has been excluded may be given credit for any work completed elsewhere in the University or in another university during a period of exclusion.

18. Appeals against exclusion

(1) In this Rule a reference to the Appeals Committee is a reference to the Senate Student Appeals Committee (Exclusions and Re-admissions).

(2) (a) (i) A student who has been excluded in accordance with this Rule may appeal to the Appeals Committee.
(ii) A student who has applied for re-admission to an award course or re-enrolment in a unit of study after a period of exclusion, and who is refused re-admission or re-enrolment may also apply to the Appeals Committee.
(b) The Appeals Committee shall comprise:
(i) three ex officio members (the Chancellor, the Deputy Chancellor and the Vice-Chancellor and Principal);
(ii) the Chair and Deputy Chairs of the Academic Board;
(iii) two student Fellows; and
(iv) up to four other Fellows.
(c) The Appeals Committee may meet as one or more subcommittees providing that each subcommittee shall include at least one member of each of the categories of:
(i) ex officio member;
(ii) Chair or Deputy Chair of the Academic Board;
(iii) student Fellow; and
(iv) other Fellows.
(d) Three members shall constitute a quorum for a meeting of the Appeals Committee or a subcommittee.
(e) The Appeals Committee and its subcommittees have authority to hear and determine all such appeals and must report its decision to the Senate annually.
(f) The Appeals Committee or a subcommittee may uphold or disallow any appeal and, at its discretion, may determine the earliest date within a maximum of four semesters at which a student who has been excluded shall be permitted to apply to re-enrol.
(g) No appeal shall be determined without granting the student the opportunity to appear in person before the Appeals Committee or subcommittee considering the appeal. A student so appearing may be accompanied by a friend or adviser.
(h) The Appeals Committee or subcommittee may hear the relevant dean but that dean may only be present at those stages at which the student is permitted to be present. Similarly, the dean is entitled to be present when the Committee or subcommittee hears the student.
(i) If, due notice having been given, a student fails to attend a meeting of the Appeals Committee or subcommittee scheduled to consider that student's appeal, the Appeals Committee or subcommittee, at its discretion, may defer consideration of the appeal or may proceed to determine the appeal.
(j) A student who has been excluded in accordance with these resolutions and has lodged a timely appeal against that exclusion may re-enrol pending determination of that appeal if it has not been determined by the commencement of classes in the next appropriate semester.

Division 7: Exceptional circumstances

19. Variation of award course requirements in exceptional circumstances

The relevant dean may vary any requirement for a particular student enrolled in an award course in that faculty where, in the opinion of the dean, exceptional circumstances exist.

Division 8: Award of degrees, diplomas and certificates

20. Classes of award

(1) Undergraduate diplomas may be awarded in five grades - pass, pass with merit, pass with distinction, pass with high distinction or honours.
(2) Degrees of bachelor may be awarded in two grades - pass or honours.
(3) Graduate diplomas and graduate certificates may be awarded in one grade only - pass.
(4) Degrees of master by coursework may be awarded three grades - pass, pass with merit or honours.

21. Award of the degree of bachelor with honours

(1) The award of honours is reserved to indicate special proficiency. The basis on which a student may qualify for the award of honours in a particular award course is specified in the faculty resolutions relating to the course.
(2) Each faculty shall publish the grading systems and criteria for the award of honours in that faculty.
(3) Classes which may be used for the award of honours are:
First Class
Second Class/Division 1
Second Class/Division 2
Third Class
(4) With respect to award courses which include an additional honours year:
(a) a student may not graduate with the pass degree while enrolled in the honours year;
(b) on the recommendation of the head of the department concerned, a dean may permit a student who has been awarded the pass degree at a recognised tertiary institution to enrol in the honours year in that faculty;
(c) faculties may prescribe the conditions under which a student may enrol part-time in the honours year;
(d) a student who fails or discontinues the honours year may not re-enrol in it, except with the approval of the dean.

22. University Medal

An honours bachelor's degree student with an outstanding academic record throughout the award course may be eligible for the award of a University Medal, in accordance with Academic Board policy and the requirements of the faculty resolutions relating to the award course concerned.

23. Award of the degree of master with honours or merit

The award of honours or pass with merit is reserved to indicate special proficiency or particular pathways to completion. The basis on which a student may qualify for the award of honours or the award with merit in a particular degree is specified in the Faculty Resolutions relating to that degree.

24. Transcripts and testamurs

(1) A student who has completed an award course or a unit of study at the University will receive an academic transcript upon application and payment of any charges required.
(2) Testamurs may indicate streams or majors or both as specified in the relevant faculty resolutions.

Division 9: Transitional provisions

25. Application of this Rule during transition

This Rule applies to all candidates for degrees, diplomas and certificates who commence candidature after 1 January 2001. Candidates who commenced candidature prior to this date may choose to proceed in accordance with the resolutions of the Senate in force at the time they enrolled, except that the faculty may determine specific conditions for any student who has re-enrolled in an award course after a period of suspension.

General University information

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

Accommodation Service

The Accommodation Service helps students find off-campus accommodation. The service maintains an extensive database of accommodation close to the Camperdown and Darlington Campus or within easy access via public transport. Currently enrolled students can access the database online through the MyUni student portal (http://myuni.usyd.edu.au), or the accommodation website via your MyUni student portal or the Services for Students website (http ://w w w.usy d. edu.au/stuserv).

Level 7, Education Building A3 5
The University of Sydney
NSW 2006 Australia

Phone:+61 293513312
Fax: +612 93518262
Email: accomm@stuserv.usyd.edu.au
Web: www.usyd.edu.au/accom

Admissions Office

The Admissions Office, located in the Student Centre, is responsible for overseeing the distribution of offers to undergraduate applicants through the Universities Admission Centre (UAC). They can advise prospective local undergraduate students on admission requirements. Postgraduate students should contact the appropriate faculty. If you are an Australian citizen or a permanent resident but have qualifications from a non-Australian institution phone +61 2 9351 4118 for more information. For enquiries regarding special admissions (including mature-age entry) phone +61 29351 3615. Applicants without Australian citizenship or permanent residency should contact the International Office (see International Student Centre entry).

Student Centre
Ground Floor, Carslaw Building F07
The University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 4117 or +61 2 9351 4118
Fax: +612 93514869
Email: admissions@records.usyd.edu.au
Web: www.usyd.edu.au/su/studentcentre

Applying for a course

Local applicants for undergraduate courses and programs of study

For the purpose of admission and enrolment "local applicant" refers to citizens and permanent residents of Australia and citizens of New Zealand. If you are in this group and wish to apply for admission into an undergraduate course, you would generally apply through the Universities Admissions Centre (UAC). The deadline for application is the last working day of September in the year before enrolment. Go to the UAC website (http://www.uac.edu.au) for more information.

Note that some faculties, such as Pharmacy, the Sydney Conservatorium of Music and Sydney College of the Arts, have additional application procedures.

Local applicants for postgraduate courses and programs of study

For the purpose of admission and enrolment "local applicant" refers to citizens and permanent residents of Australia and citizens of New Zealand. Application is direct to the faculty which offers the course that you are interested in. Application forms for postgraduate coursework, postgraduate research and the Master's qualifying or preliminary program and for non-award postgraduate study can be found at www.usyd.edu.au/su/studentcentre/applications/applications.html.

Please note that some faculties use their own specially tailored application forms for admission into their courses. Please contact the relevant faculty.

International applicants for all course types (undergraduate and postgraduate)

"International applicants" refers to all applicants other than Australian citizens, Australian permanent residents and citizens of New Zealand. In the majority of cases international applicants apply for admission through the University's International Office (IO) (see International Student Centre entry). All the information international applicants need, including application forms, is available from the IO website.

Assessment

For assessment matters refer to the relevant department or school.

Careers Centre

The Careers Centre will help you with careers preparation and gradutate recruitment.

Careers Centre
Ground Floor, Mackie Building KOI
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 3481
Fax: +612 93515134
Email: info@careers.usyd.edu.au
Web: www.careers.usyd.edu.au

Casual Employment Service

The Casual Employment Service helps students find casual and part-time work during their studies and during University vacations. The service maintains a database of casual employment vacancies. Currently enrolled students can access the database online through the MyUni student portal, or the casual employment website via your MyUni student portal, or the Services for Students website (http ://ww w.usy d. edu.au/stuserv).

Level 7, Education Building A3 5
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 8714
Fax: +612 93518717
Email: ces@stuserv.usyd.edu.au
Web: www.usyd.edu.au/cas_emp

Centre for Continuing Education

The Centre for Continuing Education offers a wide range of short courses for special interest, university preparation and professional development.
Centre for Continuing Education
Cnr Missenden Road and Campbell Street
Sydney University Village
Newtown NSW 2042

Postal address:
Locked Bag 20
Glebe NSW 2037

Ph: +612 9036 4789
Fax:+61 2 9036 4799
Email: info@cce.usyd.edu.au
Web: www.cce.usyd.edu.au

Subject areas include: history and culture, creative arts, social sciences, languages, IT, business and overseas study tours. Courses are open to everyone.

Centre for English Teaching (CET)

The Centre for English Teaching (CET) offers English language and academic study skills programs to students from overseas and Australian residents from non-English speaking backgrounds who need to develop their English language skills to meet academic entry requirements.

Mallett Street Campus M02

Phone:+61 2 9351 0760
Fax: +612 93510710
Email: info@cet.usyd.edu.au
Web: www.usyd.edu.au/cet

Child care

Contact the Child Care Information Officer for information about child care for students and staff of the University who are parents. For details of centres, vacation and occasional care see the child care website via your MyUni student portal or the Services for Students website (http://www.usyd.edu.au/stuserv)

Child Care Information Officer
Level 7, Education Building A35

Phone:+61 2 9351 5667
Fax: +612 93517055
Email: childc@stuserv.usyd.edu.au
Web: www.usyd.edu.au/childcare

Client Services, Information and Communications Technology (ICT)

Client Services are responsible for the delivery of many of the computing services provided to students. Students can contact Client Services by phoning the ICT Helpdesk on 9351 6000, through the IT Assist website (www.itassist.usyd.edu.au) or by visiting the staff of the University Access Labs.
The access labs on the Camperdown and Darlington campus are located in:

- Fisher Library (Level 2);
- Carslaw Building (Room 201);
- Education Building (Room 232);
- Christopher Brennan Building (Room 232);
- Engineering Link Building (Room 222); and
- Pharmacy and Bank Building (Room 510).

Other labs are available at the Law, Westmead Hospital and Cumberland campuses.

The labs provide students free access to computers including office productivity and desktop publishing software.

Services available on a fee for service basis include Internet access, printing facilities and the opportunity to host their own non-commercial website.

Each student is supplied with an account, called a "Unikey" account, which allows access to a number of services including:

- free email (www-mail.usyd.edu.au);
- access to the Internet from home or residential colleges (www.itassist.usyd.edu.au/services.html);
- student facilities via the MyUni student portal (http://my-uni.usyd.edu.au), including exam results, enrolment variations and timetabling; and
- free courses in basic computing (such as MS Office; basic html and excel) that are run by Access Lab staff in the week following orientation week. To register contact the Access Lab Supervisor on+61 2 9351 6870.

Client Services, Helpdesk
University Computer Centre, H08
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 6000
Fax: +612 93516004
Email: support@usyd.edu.au
Web: www.itassist.usyd.edu.au

The Co-op Bookshop

The Co-op Bookshop is a one-stop bookshop for:

- textbooks;
- general books;
- course notes;
- reference books;
- DVDs;
- flash drives; and
- software at academic prices.

Lifetime membership costs $20.00 and gives a ten per cent discount on purchases (conditions apply).

Sports and Aquatic Centre Building G09

Phone:+61 2 9351 3705
Fax: +61 2 9660 5256
Email: sydu@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. Counselling is free and confidential. The service provides short-term, problem-focused counselling to promote psychological wellbeing and to help students develop effective and realistic coping strategies. The service runs a program of workshops during each semester. For details of workshops, activities and online resources provided by the service see the Counselling Service website via your MyUni student portal or the Services for Students website www.usyd.edu.au/stuserv.

Camperdown and Darlington
Level 7, Education Building A3 5
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 2228
Fax: +612 93517055
Email: counsell@mail.usyd.edu.au
Web: www.usyd.edu.au/counsel

Cumberland Campus
Ground Floor, A Block, Cumberland Campus C42
The University of Sydney
East Street
Lidcombe
NSW 2141 Australia

Phone:+61 2 9351 9638
Fax: +612 93519635
Email: CS_Cumberland@fhs.usyd.edu.au
Web: www.usyd.edu.au/counsel

Disability Services

Disability Services is the principal point of contact for 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 their areas of study. Assistance available includes the provision of note taking, interpreters and advocacy with academic staff to negotiate assessment and course requirement modifications where appropriate. For details on registering with the service and online resources see the Disability Services website via your MyUni student portal or the Services for Students website www.usyd.edu.au/stuserv.

Camperdown and Darlington campuses

Level 7, Education Building A3 5
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 7040
Fax: +612 93513320
TTY: +612 93513412
Email: disserv @ stuserv.usyd.edu.au
Web: www.usyd.edu.au/disability

Cumberland Campus

Ground Floor, A Block, Cumberland Campus C42
The University of Sydney
East Street
Lidcombe
NSW 2141 Australia
Phone:+61 2 9351 9638
Fax: +612 93519635
Email: DS_Cumberland@fhs.usyd.edu.au
Web: www.usyd.edu.au/disability

Enrolment

Students entering fir sty ear

Details of enrolment procedures will be sent to you with your UAC offer of enrolment. Enrolment takes place at a specific time and date, usually during the last week of January, depending on your surname and the faculty in which you are enrolling. You must attend the University in person or else nominate somebody in writing to act on your behalf. On enrolment day you pay the compulsory fees for joining the Student Union, the Students' Representative Council and sporting bodies. (These are currently subject to Parliamentary Review and may be voluntary in 2006.) You also nominate your preferred payment option, either "up front" or deferred, for your Higher Contribution Scheme (HECS) liability. You will also choose your first-year units of study, so it's important to consult the appropriate faculty handbook before enrolling.

All other students

A pre-enrolment package is sent to all enrolled students in late September and contains instructions on the procedure for pre-enrolment.

Environmental Policy

The University of Sydney's Environmental Policy promotes sustainable resource and product use; and encourages the practice of environmental stewardship by staff and students. The policy is supported by the University wide Sustainable Campus Program.

Enquiries can be directed to the Manager, Environmental Strategies phone +61 2 93512063, email: janet.broady@usyd.edu.au, or go to www.facilities.usyd.edu.au/projects/environ/about.shtmlwhereyou can find out what the University is doing and how you can get involved, make suggestions or receive the Sustainable Campus Newsletter.

Examinations

The Examinations and Exclusions Office looks after the majority of examination arrangements and student progression. Some faculties, such as the Sydney Conservatorium of Music, make all examination arrangements for the units of study that they offer.

Examinations and Exclusions Office
Student Centre
Level 1, Carslaw Building F07
The University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 4005 or +61 2 9351 4006
Fax: +612 93517330
Email: exams.office@exams.usyd.edu.au

Fees

The Fees Office provides information on how to pay fees, where to pay fees and if payments have been received. The office also has information on obtaining a refund for fee payments.

Fees Office
Margaret Telfer Building K07
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 5222
Fax: +612 93514202

Financial Assistance Office

The University of Sydney has a number of loan and bursary funds to assist students experiencing financial difficulties. Loan assistance is available for undergraduate and postgraduate students enrolled in degree and diploma courses at the University. The assistance is not intended to provide the principle means of support but to help enrolled students in financial need with expenses such as housing bonds and rent; phone and electricity bills; medical expenses; buying textbooks and course equipment. Loans are interest free and are repayable usually within one year. Bursaries may be awarded depending on financial need and academic merit and are usually only available to local full-time undergraduate students. Advertised bursaries, including First Year Bursaries, are advertised through the MyUni student portal in January each year. For details of types of assistance and online resources provided by the service see the Financial Assistance website via your MyUni student protal or the Services for Students website www.usyd.edu.au/stuserv

Level 7, Education Building A3 5
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 2416
Fax: +612 93517055
Email: fao@stuserv.usyd.edu.au
Web: www.usyd.edu.au/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 University to be made available to the public;
- enables a member of the public to obtain access to documents held by the University; and
- enables a member of the public to ensure that records held by the University concerning his or her personal affairs are not incomplete, incorrect, out of date or misleading.

(Note that a "member of the public" includes staff and students of the University.)

It is a requirement of the act that applications be processed and a determination made within a specified time period, generally 21 days. Determinations are made by the University's Registrar.

While application may be made to access University documents, some may not be released in accordance with particular exemptions

provided by the act. There are review and appeal mechanisms which apply when access has been refused.

The University is required to report to the public on its freedom of information (FOI) activities on a regular basis. The two reports produced are the *Statement of Affairs* and the *Summary of Affairs.* The *Statement of Affairs* contains information about the University, its structure, function and the kinds of documents held. The *Summary of Affairs* identifies the University's policy documents and provides information on how to make an application for access to University documents.

Further information and copies of the current reports may be found at www.usyd.edu.au/arms/foi

Graduations Office

The Graduations Office is responsible for organising graduation ceremonies and informing students of their graduation arrangements.

Student Centre
Carslaw Building F07
The University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 3199, +61 2 9351 4009
Protocol:+61 2 93514612
Fax: +612 93515072

(Grievances) Appeals

You may consider that a decision affecting your candidature for a degree or other activities at the University has not taken into account all relevant matters.

In some cases the by-laws or resolutions of the Senate (see the University Calendar (http://www.usyd.edu.au/about/publication/pub/calendar.shtml)) 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 policy online website (http://www.usyd.edu.au/policy) (click on "Study at the University", then click on "Appeals" - see the Academic Board and Senate resolutions).

For assistance or advice regarding an appeal contact:

Students' Representative Council
Level 1, Wentworth Building G01
The University of Sydney
NSW 2006 Australia

Phone: +61 2 9660 5222

HECS and Fees Office

Student Centre
Ground Floor, Carslaw Building F07
The University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 5659, +61 2 9351 5062, +61 2 9351 2086
Fax: +612 93515081

International Student Centre

The International Student Centre consists of the International Office and the Study Abroad and Exchange Office. The IO provides assistance with application, admission and enrolment procedures and administers scholarships for international students. 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:+61 2 9351 4079
Fax: +612 93514013
Email: info@io.usyd.edu.au
Web: www.usyd.edu.au/international

Study Abroad and Exchange Unit

Study Abroad
Phone:+61 2 9351 3699
Fax: +612 93512795
Email: studyabroad@io.usyd.edu.au
Web: www.usyd.edu.au/fstudent/studyabroad/index.shtml

Exchange
Phone:+61 2 9351 3699
Fax: +612 93512795
Email: exchange@io.usyd.edu.au
Web: ww w.usyd. edu. au/fstudent/study abroad/partners. shtml

International Student Services Unit

The International Student Services Unit assists international students through the provision of orientation, counselling and welfare services to both students and their families. ISSU aims to help international students cope successfully with the challenges of living and studying in a unfamiliar culture, to achieve success in their studies and to make the experience of being an international student rewarding and enjoyable. For details of orientation activities, counselling and welfare services provided to both students and their families and online resources, see the MyUni student portal or the Services for Students website www.usyd.edu.au/stuserv. International students also have access to all University student support services.

Camperdown and Darlington campuses

Ground Floor, Services Building G12
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 4749
Fax: +612 93516818
Email: info@issu.usyd.edu.au
Web: www.usyd.edu.au/issu

Cumberland Campus

Ground Floor, A Block, Cumberland Campus C42
The University of Sydney
East Street
Lidcombe
NSW 2141 Australia

Phone:+61 2 9351 9638
Fax: +612 93519635
Email: ISSU_Cumberland@fhs.usyd.edu.au
Web: www.usyd.edu.au/issu

Koori Centre and Yooroang Garang

The Koori Centre provides programs, services and facilities to encourage and support the involvement of Aboriginal and Torres Strait Islander people in all aspects of tertiary education at the University of Sydney. The Cadigal Special Entry Program assists Indigenous Australians to enter undergraduate study across all areas of the University.

As well as delivering block-mode courses for Indigenous Australian students, the Koori Centre teaches Aboriginal Studies in various mainstream courses. In addition the Centre provides tutorial assistance, and student facilities such as: computer lab, Indigenous research library and study rooms.
In particular the Koori Centre aims to increase the successful participation of Indigenous Australians in undergraduate and postgraduate degrees, develop the teaching of Aboriginal Studies, conduct research

in the field of Aboriginal education, and establish working ties with schools and communities.

The Koori Centre works in close collaboration with Yooroang Garang: School of Indigenous Health Studies in the Faculty of Health Sciences at the University's Cumberland Campus. Yooroang Garang provides advice, assistance and academic support for Indigenous students in the faculty, as well as preparatory undergraduate and postgraduate courses.

Koori Centre
Ground Floor, Old Teachers College A22
The University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 2046 (general enquiries)
Toll Free: 1800 622 742
Community Liaison Officer: +61 2 9351 7003
Fax: +612 93516923
Email: koori@koori.usyd.edu.au
Web: www.koori.usyd.edu.au

Yooroang Garang
T Block, Level 4, Cumberland Campus C42
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 9393
Toll Free: 1800 000 418
Fax: +612 93519400
Email: yginfo@fhs.usyd.edu.au
Web: www.yg.fhs.usyd.edu.au

Learning Centre

The Learning Centre helps students develop the generic learning and communication skills that are necessary for university study and beyond. The centre is committed to helping students achieve their academic potential throughout their undergraduate and postgraduate studies. The centre's program includes a wide range of workshops on study skills, academic reading and writing, oral communication skills and postgraduate writing and research skills. Other services include an individual learning program, a special program for international students, faculty-based workshops, computer-based learning resources, publications of learning resources and library facilities. For details of programs, activities and online resources provided by the centre see the website via your MyUni student portal or the Services for Students website www.usyd.edu.au/stuserv.

Camperdown and Darlington campuses
Level 7, Education Building A3 5
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 3853
Fax: +612 93514865
Email: lc@stuserv.usyd.edu.au
Web: www.usyd.edu.au/lc

Cumberland Campus
Ground Floor, A Block, Cumberland Campus C42
The University of Sydney
East Street
Lidcombe
NSW 2141 Australia

Phone:+61 2 9351 9638
Fax: +612 93519635
Email: LC_Cumberland @ fhs .usyd. edu. au
Web: www.usyd.edu.au/lc

Library

The University of Sydney Library, the largest academic library in the Southern Hemisphere, is a network of 18 libraries located on nine campuses. The Library website (http://www.library.usyd.edu.au) provides access to services and resources, anywhere at anytime. The locations, opening hours and subject specialities of the libraries are listed on the website.

Over five million items are available via the Library catalogue, including more than 52,000 electronic journals and 270,000 electronic books. Past exam papers are also available online. Enrolled students are entitled to borrow from any of the University Libraries. More information is available at www.library.usyd.edu.au/borrowing.

Reading list items are available via the reserve service. Increasingly, reading list material is becoming available in electronic form. For details see the reserve service website (http://opac.library.usyd.edu.au/screens/reserve.html).

Library staff are always available to support students in their studies. "Ask a Librarian" in person, by email, or by using an online chat service (http://www.library.usyd.edu.au/contacts/index.html).

A specialist librarian is available for all discipline areas and will provide training in finding high quality information. Courses cover a range of skills including research methodology, database searching, effective use of the Internet and the use of reference management software. See the subject contact page (http://www.library.usyd.edu.au/contacts/subjectcontacts.html).

Library facilities include individual and group study spaces, computers, printers, multimedia equipment, photocopiers and adaptive technologies. Check the "Libraries" link on the home page (http://www.library.usyd.edu.au) to find out about services and facilities in specific libraries.

The *Client Service Charter* describes the Library's commitment to supporting students' learning, including those with special needs. See the *Client Service Charter* online (http://www.library.usyd.edu.au/about/policies/clientcharter.html).

Your comments and suggestions are always welcome.

University of Sydney Library F03
University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 2993 (general enquiries)
Fax: +61 2 9351 2890 (administration), +61 2 9351 7278 (renewals)
Email: loanenq@library.usyd.edu.au (loan enquiries), udd@library.usyd.edu.au (document delivery enquiries)
Web: www.library.usyd.edu.au

Mathematics Learning Centre

The Mathematics Learning Centre assists undergraduate students to develop the mathematical knowledge, skills and confidence that are needed for studying first level mathematics or statistics units at university. The entre runs bridging courses in mathematics at the beginning of the academic year (fees apply). The centre also provides ongoing support to eligible students during the year through individual assistance and small group tutorials. For details of activities and online resources provided by the centre see the website via your MyUni student portal or the Services for Students website www.usyd.edu.au/stuserv.

Level 4, Carslaw Building F07
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 4061
Fax: +612 93515797
Email: mlc@stuserv.usyd.edu.au
Web: www.usyd.edu.au/mlc

Multimedia and Educational Technologies in Arts (META) Resource Centre (Languages and E-Learning)

The centre provides access to lectures, classwork and interactive self-paced learning materials for students of languages other than English (LOTE) and English as a second language (ESL). The library

holds materials in over 90 LOTE languages. The self study room provides interactive computer assisted learning and access to live multilingual satellite television broadcasts. Computer access labs provide Internet, email and word processing access. The centre also provides teaching rooms with state-of-the-art multimedia equipment, language laboratories and video conferencing facilities for Faculty of Arts courses.

Level 2, Brennan Building (opposite Manning House)
The University of Sydney
NSW 2006 Australia

Phone: For language enquiries +612 9351 2371, for all other enquiries +612 93516781
Fax:+61 2 9351 3626
Email: For language related enquiries language.enquiries® arts.usyd.edu.au, for all other enquiries METAResourceCentre@arts.usyd.edu
Web: www.arts.usyd.edu.au/centres/meta

MyUni Student Portal

Launched in July 2004, the MyUni student portal (http://myuni.usyd.edu.au) is the starting point and "one-stop" environment for students to access all their web-based University information and services. MyUni automatically tailors what a student sees based on thier login-in and offers students the option of further personalising content. Most importantly, MyUni allows students to complete tasks online that would previously have required attendance in person. The following are examples of MyUni services and information:

- support services for students in health, counselling, child care, accommodation, employment and wellbeing;
- student administration systems for obtaining exam results, enrolment and variations, timetabling, email services and links to courses and units of study information;
- links to the University's e-learning systems;
- library services;
- important messages and student alerts;
- information technology and support services;
- information for international students; and
- campus maps, with descriptions of cultural, sporting and campus facilities.

Part-time, full-time

Undergraduate Students

Undergraduate students are usually considered full-time if they have a student load 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.

Postgraduate Students (Coursework)

For postgraduate coursework students part-time or full-time status is determined by credit-point load. Enrolment in units of study which total at least 18 credit points in a semester is classed as full-time. Anything under this amount is a part-time study load. Please note that classes for some coursework programs are held in the evenings (usually 6-9pm).

Postgraduate Students (Research)

Full-time candidates for research degrees do not keep to the normal semester schedule, instead they work continuously throughout the year with a period of four weeks recreation leave. There is no strict definition of what constitutes full-time candidature but if you have employment or other commitments that would prevent you from devoting at least the equivalent of a 35-hour working week to your candidature (including attendance at the University for lectures, seminars, practical work and consultation with your supervisor) you should enrol as a part-time candidate. If in doubt you should consult your faculty or supervisor.

International Students

Student visa regulations require international students to undertake full-time study. International students on visas other than student visas may be permitted to study part-time.

Privacy

The University is subject to the *NSW Privacy and Personal Information Protection Act 1998* and the *NSW Health Records and Information Privacy Act 2002.* Central to both acts are the sets of information protection principles (IPPs) and health privacy principles which regulate the collection, management, use and disclosure of personal and health information. In compliance with the *Privacy and Personal Information Protection Act* the University developed a *Privacy Management Plan* which includes the *University Privacy Policy.* The *Privacy Management Plan* sets out the IPPs and how they apply to functions and activities carried out by the University. Both the plan and the *University Privacy Policy* were endorsed by the Vice-Chancellor on 28 June 2000.

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,* the *Health Records and Information Privacy Act* or the *Privacy Management Plan* should be directed to:

Tim Robinson: +61 2 9351 4263, or Anne Picot: +61 2 9351 7262
Email: foi@mail.usyd.edu.au

Scholarships for undergraduates

Scholarships Unit
Room 147, Ground Floor, Mackie Building KOI
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 2717
Fax: +612 93515134
Email: scholarships@careers.usyd.edu.au
Web: www.usyd.edu.au/scholarships

Student Centre

Ground Floor, Carslaw Building F07
The University of Sydney
NSW 2006 Australia

Phone: +61 2 9351 3023 (general enquiries)
Academic records: +61 2 9351 4109
Discontinuation of enrolment: +61 2 9351 3023
Handbooks: +61 2 9351 5057
Prizes:+61 2 9351 5060
Fax: +61 2 9351 5081, +61 2 9351 5350 (academic records)
Web: www.usyd.edu.au/su/studentcentre

Student Identity Cards

The student identity card functions as a library borrowing card, a transport concession card (when suitably endorsed) and a general identity card. The card must be carried at all times on the grounds of the University and must be shown on demand. Students are required to provide a passport-sized colour photograph of their head and shoulders for lamination on to this card. Free lamination is provided at a range of sites throughout the University during the January/February enrolment/pre-enrolment period. Cards that are not laminated, or do not include a photograph, will be rejected. New identity cards are required for each year of a student's enrolment.

Student Services

The University provides personal, welfare, administrative 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. For details of services and online resources provided see the Student Services website (http://www.usyd.edu.au/stuserv).

The Sydney Summer School

Most faculties at the University offer units of study from undergraduate degree programs during summer. There are also some units of study available for postgraduate coursework programs from some faculties. As the University uses its entire quota of Commonwealth supported places in first and second semester, these units are full fee-paying for both local and international students and enrolment is entirely voluntary. However, Summer School units enable students to accelerate their degree progress, make up for a failed unit or fit in a unit which otherwise would not suit their timetables. New students may also gain a head start by completing subjects before they commence their degrees. Units start at various times from late November and run for up to six weeks (followed by an examination week). Notice of the units available is on the Summer School website (http://www.summer.usyd.edu.au) and is usually circulated to students with their results notices. A smaller Winter School is also run from the Summer School office. It commences on 3 July and runs for up to three weeks (followed by an examination week). It offers mainly postgraduate and a few undergraduate units of study. Information can be found on the Summer School website (http://www.summer.usyd.edu.au).

Timetabling Unit

The Timetabling Unit in the Student Centre is responsible for producing students' class and tutorial timetables. Semester One timetables are available from the Wednesday of O Week through the MyUni website (http://myuni.usyd.edu.au).

The Faculty of Health Sciences, The Sydney College of the Arts, The Sydney Conservatorium of Music and the Faculty of Vetinary Science produce their own timetables for all teaching that they deliver. These timetables are available from the faculties.

University Health Service

The University Health Service provides full general practitioner services and emergency medical care to all members of the University community. Medical centres on the Camperdown and Darlington Campuses offer general practioners, physiotherapy and some specialist services.

Email: director@unihealth.usyd.edu.au
Web: www.unihealth.usyd.edu.au

University Health Service (Wentworth)
Level 3, Wentworth Building G01
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 3484
Fax: +612 93514110

University Health Service (Holme)
Science Rd entry, Holme Building A09
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 4095
Fax: +612 93514338

See also the Glossary for administrative information relating to particular terms.

Student organisations

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

Students' Representative Council

The Students' Representative Council (SRC) is the organisation which represents undergraduates both within the University and in the wider community. All students enrolling in an undergraduate course automatically become members of the SRC.

Level 1, Wentworth Building G01
The University of Sydney
NSW 2006 Australia

Phone: + 612 9660 5222 (editors, *Honi Soit/Legsl* Aid, Student Welfare and Centrelink advice, interest free loans)
Second-hand Bookshop: +61 2 9660 4756
Mallet Street: +61 2 9351 0691
Conservatorium: +61 2 9351 1291
Fax: +61 2 9660 4260
Email: info@src.usyd.edu.au
Web: www.src.usyd.edu.au

Sydney University Postgraduate Representative Association (SUPRA)

SUPRA is an organisation that provides services to and represents the interests of postgraduate students.
All postgraduate students at the University of Sydney are members of SUPRA.

Raglan Street Building G10
University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 3715
Freecall: 1800 249 950
Fax: +612 93516400
Email: supra@mail.usyd.edu.au
Web: www.supra.usyd.edu.au

Sydney University Sport

Sydney University Sport provides opportunities for participation in a range of sporting and recreational activities along with first class facilities.

University Sports and Aquatic Centre G09
The University of Sydney
NSW 2006 Australia

Phone:+61 2 9351 4960
Fax: +612 93514962
Email: admin@susport.usyd.edu.au
Web: www.susport.com

University of Sydney Union

The University of Sydney Union is the main provider of catering facilities, retail services, welfare programs and social and cultural events for the University community on the Camperdown and Darlington campuses and at many of the University's affiliated campuses.

University of Sydney Union
Level 1, Manning House A23
The University of Sydney
NSW 2006 Australia

Phone: 1800 013 201 (switchboard)
Fax: +61 2 9563 6109
Email: info@usu.usyd.edu.au
Web: www.usydunion.com

Abbreviations

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

For a glossary of terms, describing the terminology in use at the University of Sydney, please see the glossary section.

Listed below are the more commonly used acronyms that appear in University documents and publications.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

AARNet	Australian Academic Research Network
AAUT	Australian Awards for University Teaching
AAM	Annual Average Mark
ABC	Activity Based Costing
ABSTUDY	Aboriginal Study Assistance Scheme
ACER	Australian Council for Educational Research
AGSM	Australian Graduate School of Management
ANZAAS	Australian and New Zealand Association for the Advancement of Science
APA	Australian Postgraduate Awards
APAC	Australian Partnership for Advanced Computing
APAI	Australian Postgraduate Awards (Industry)
APA-IT	Australian Postgraduate Awards in Information Technology
APDI	Australian Postdoctoral Fellowships Industry
APEC	Asia-Pacific Economic Cooperation
APF	Australian Postdoctoral Fellowship
AQF	Australian Qualifications Framework
ARC	Australian Research Council
ARTS	Automated Results Transfer System
ASDOT	Assessment Fee Subsidy for Disadvantaged Overseas Students
ATN	Australian Technology Network
ATP	Australian Technology Park
ATPL	Australian Technology Park Limited
AUQA	Australian Universities Quality Agency
AusAID	Australian Agency for International Development
AUTC	Australian Universities Teaching Committee
AVCC	Australian Vice-Chancellors Committee

B

BAA	Backing Australia's Ability
BAC	Budget Advisory Committee
BITLab	Business Intelligence Lab
BLO	Business Liaison Office
BOTPLS	Bridging for Overseas Trained Professionals Loans Scheme

C

CAF	Cost Adjustment Factor
CAUT	Committee for Advancement of University Teaching
CDP	Capital Development Program
CEP	Country Education Profile
CEQ	Course Experience Questionnaire
CFO	Chief Financial Officer
CHASS	College of Humanities and Social Sciences
CHESSN	Commonwealth Higher Education System Student Number
CHS	College of Health Sciences
CIO	Chief Information Officer
COE	Confirmation of Enrolment
CPSU	Community and Public Sector Union
CRC	Cooperative Research Centre

C

CREO	Centre for Regional Education, Orange
CRICOS	Commonwealth Register of Institutions and Courses for Overseas Students
CRRI	Centre for Rural and Regional Innovation
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CST	College of Sciences and Technology
CULT	Combined Universities Language Test
CUTSD	Committee for University Teaching and Staff Development

D

DAC	Data Audit Committee
DEST	Commonwealth Department of Education, Science and Training
DET	NSW Department of Education and Training
D-IRD	Discovery-Indigenous Researchers Development Program
DVC	Deputy Vice-Chancellor

E

EB	Enterprise Bargaining
EFTSU	Equivalent Full-Time Student Unit
EFTSL	Equivalent Full-Time Student Load
EIP	Evaluations and Investigations Program
ELICOS	English Language Intensive Course of Study
EMU	Electron Microscope Unit
ESOS Act	Education Services for Overseas Student Act

F

FFT	Fractional Full-Time (Equivalent Staff)
FlexSIS	Flexible Student Information System
FHS	Faculty of Health Sciences
FMO	Facilities Management Office
FOS	Field of Study
FTE	Full-Time Equivalent (Staff)
FRM	Faculty of Rural Management

G

GATS	General Agreement on Trade in Services
GCCA	Graduate Careers Council of Australia
GDS	Graduate Destination Survey
GPOF	General Purpose Operating Funds
GSA	Graduate Skills Assessment
GSG	Graduate School of Government
GWSLN	Greater Western Sydney Learning Network

H

HDR	Higher Degree Research
HECS	Higher Education Contribution Scheme
HEEP	Higher Education Equity Program
HEFA	Higher Education Funding Act 1988
HEIMS	Higher Education Information Management System
HEIP	Higher Education Innovation Program (DEST)
HELP	Higher Education Loan Program

H

HEO	Higher Education Officer
HEP	Higher Education Provider
HERDC	Higher Education Research Data Collection
HESA	Higher Education Support Act
HOD	Head of Department

I

IAF	Institutional Assessment Framework (This is a new name for what was previously the DEST Profile process.)
IAS	Institute of Advanced Studies
ICT	Information and Communication Technology
ICTR	Information and Communication Technology Resources
IELTS	International English Language Testing Scheme
IGS	Institutional Grants Scheme (DEST)
10	International Office
IP	Intellectual Property
IPRS	International Postgraduate Research Scholarships
IREX	International Researcher Exchange Scheme
ISFP	Indigenous Support Funding Program
ISIG	Innovation Summit Implementation Group
ISSU	International Student Services Unit
ITC	Information Technology Committee
ITL	Institute for Teaching and Learning
ITS	Information Technology Services

J

JASON	Joint Academic Scholarships Online Network

L

LBOTE	Language Background Other Than English

M

MBA	Master of Business Administration
MISG	Management Information Steering Group
MNRF	Major National Research Facilities Scheme
MOU	Memorandum of Understanding
MPG	Major Projects Group
MRB	Medical Rural Bonded Scholarship Scheme

N

NBCOTP	National Bridging Courses for Overseas Trained Program
NCG	National Competitive Grant
NESB	Non-English-Speaking Background
NHMRC	National Health and Medical Research Council
NOIE	National Office for the Information Economy
NOOSR	National Office for Overseas Skill Recognition
NRSL	Non-Recent School Leaver
NSWVCC	New South Wales Vice-Chancellors' Conference
NTEU	National Tertiary Education Industry Union

O

OECD	Organisation for Economic Cooperation and Development
OLA	Open Learning Australia
OLDPS	Open Learning Deferred Payment Scheme
OPRS	Overseas Postgraduate Research Scholarships

P

PELS	Postgraduate Education Loans Scheme
PSO	Planning Support Office
PVC	Pro-Vice-Chancellor

Q

QA	Quality Assurance
QACG	Quality Advisory and Coordination Group

R

R&D	Research and Development
R&R	Restructuring and Rationalisation Program
RC	Responsibility Centre
REG	Research and Earmarked Grants
REP	Research Education Program
RFM	Relative Funding Model
RIBG	Research Infrastructure Block Grant (DEST)
RIEF	Research Infrastructure Equipment and Facilities Scheme
RISF	Restructuring Initiatives Support Fund
RMO	Risk Management Office
ROA	Record of Achievement
RQ	Research Quantum
RQU	Recognition Quality Unit (Higher Education Division - DEST)
RRTMR	Research and Research Training Management Reports
RSL	Recent School Leaver
RTS	Research Training Scheme (DEST)

S

SCA	Sydney College of the Arts
SCEQ	Sydney Course Experience Questionnaire
SCM	Sydney Conservatorium of Music
SCR	Science Capability Review
SDF	Strategic Development Fund
SEG	Senior Executive Group
SES	Socioeconomic Status
SI	Scholarship Index
SLE	Student Learning Entitlement
SNA	Safety Net Adjustment
SPIRT	Strategic Partnerships with Industry - Research and Training Scheme
SPR	Student Progress Rate
SRC	Students' Representative Council
SSR	Student/Staff Ratio
STABEX	Study Abroad Exchange (database)
SUPRA	Sydney University Postgraduate Students' Representative Association
SUSport	Sydney Univerisity Sport

T

TAFE	Technical and Further Education
TOEFL	Test of English as a foreign language
TPI	Teaching Performance Indicator

u

UAC	Universities Admissions Centre
UMAP	University Mobility in Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UPA	University Postgraduate Awards

V

VCAC	Vice-Chancellor's Advisory Committee
VET	Vocational Education and Training

W

WAM	Weighted Average Mark
WRP	Workplace Reform Program
WTO	World Trade Organization

Y

YFE	Year of First Enrolment

Glossary

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

For a table of the more commonly used acronyms and abbreviations that appear in University documents and publications please see the abbreviations section.

This glossary describes terminology in use at the University of Sydney.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

Annual average mark (AAM)

The average mark over all units of study attempted in a given academic year (equivalent to the calendar year).

The formula for this calculation is:

$$AAM = \frac{\Sigma\ (marks \times credit\ point\ value)}{\Sigma\ (credit\ point\ value)}$$

(sums over all units of study completed in the selected period)

Where the mark is the actual mark obtained by the student for the unit of study, or in the case of a failing grade with no mark - 0. Pass/Fail assessed subjects and credit transfer subjects (from another institution) are excluded from these calculations; however, the marks from all attempts at a unit of study are included.

Academic Board

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 and policy relating to the admission and candidature of students. (For further information, see the University Calendar.)

Academic cycle

The program of teaching sessions offered over a year. Currently the cycle runs from the enrolment period for Semester One through to the completion of the processing of results at the end of Semester Two. (See also Stage.)

Academic dishonesty

Academic dishonesty occurs when a student presents another person's ideas, findings or written work as his or her own by copying or reproducing them without due acknowledgement of the source and with intent to deceive the examiner. Academic dishonesty also covers recycling, fabrication of data, engaging another person to complete an assessment or cheating in exams. (See also Plagiarism.)

Academic record

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 and is not released to a third party without the written authorisation of the student. (See also Academic transcript.)

Academic transcript

A printed statement setting out a student's academic record at the University. There are two forms of academic transcript: external and internal. (See also External transcript, Internal transcript.)

Academic year

The current calendar year in which a student is enrolled. (See also Academic cycle, Stage.)

Admission

Governed by the University's admission policy, this 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 basis

The main criteria 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 (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 mode

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.

Admission year

The year the student expects to begin the course (see also Commencement date.)

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.)

Aegrotat

In exceptional circumstances involving serious illness or death of a student prior to completion of their course, the award of aegrotat and posthumous degrees and diplomas may be conferred.

Alumni sidneiensis

A searchable database of graduates of the University from 1857 to 30 years prior to the current year.

Annual average mark (AAM)

The average mark over all units of study attempted in a given academic year (equivalent to the calendar year).

The formula for this calculation is:
(mark* credit_pt_value)/ (credit_pt_value)
(sums over all units of study completed in the selected period)

Where the mark is the actual mark obtained by the student for the unit of study, or in the case of a failing grade with no mark - 0. Pass/Fail assessed subjects and credit transfer subjects (from another institution) are excluded from these calculations; however, the marks from all attempts at a unit of study are included.

Annual progress report

A form 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 their nominee). The completed form is attached to the student's official file.

Appeals

Students may lodge an appeal against academic or disciplinary decisions. An academic appeal (e.g. against exclusion) is managed by the Student Centre - Exclusions Office while it is under consideration and a record of the outcome of the appeal will be retained.

Assessment

The process of measuring the performance of students in units of study and courses. Performance may be assessed by examinations, essays, laboratory projects, assignments, theses, treatises or dissertations. (See also Result processing, Result processing schedule.)

Formative assessment
Formative assessment is used principally to provide students with feedback on their progress in learning. It reinforces successful learning, and is an opportunity for students to expose the limitations in their knowledge and understanding.

Summative assessment
Summative assessment is used to certify competence, or to arrange students in a rank order of merit. It certifies the attainment of a standard, and is used as the basis for progression to the next part of a program, or to graduation.

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 pattern

Attendance pattern is classified as full-time, part-time or external, this is dependant on the student's mode of attendance and the student load.

Attendance mode

A Department of Education, Science and Technology (DEST) classification defining the manner in which a student is undertaking a course, i.e. internal, external, mixed or offshore.

Australian Graduate School of Management (AGSM)

A joint venture with the University of New South Wales. The AGSM is derived from the Graduate School of Business at the University of Sydney and the then AGSM at the University of New South Wales.

Australian Qualifications Framework (AQF)

The framework for recognition and endorsement of qualifications established by the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA).

AUSTUDY

Austudy provides financial help to students who are aged 25 years or more who meet the required criteria, and are undertaking an approved full-time course at an approved institution. (See also Youth Allowance.)

Automated Results Transfer System (ARTS)

This system was developed by the Australasian Conference of Tertiary Admissions Centres (ACTAC) to allow the electronic academic record of a student to be accessed, via an admission centre, by tertiary institutions.

Award course
(See Course.)

B

Bachelor's degree

The highest undergraduate award offered at the University. 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

An instruction placed on a student's record that prevents the student from re-enrolling or graduating. (See also Deadlines (fees), Suppression of results.)

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

Financial award made to a student, based primarily on need. (See also Scholarships.)

C

Cadigal program

A program, named in recognition of the Aboriginal people of the land on which the University is located, designed to increase the successful participation of Aboriginal and Torres Strait Islander people in degree courses in all faculties at the University of Sydney.

Campus

The grounds on which the University is situated. There are 11 campuses of the University of Sydney:

- Burren Street (Institute for International Health, Institute of Transport Studies)
- Camperdown and Darlington (formerly known as Main Campus)
- Camden (Agriculture and Veterinary Science)
- Conservatorium (Sydney Conservatorium of Music)
- Cumberland (Health Sciences)
- Mallett Street (Nursing)
- Orange (Faculty of Rural Management and Centre for Regional Education)
- Rozelle (Sydney College of the Arts)
- St James (Law)
- Surry Hills (Dentistry)

Cancellation

Where enrolment is cancelled for non-payment of fees.

Candidature

Candidature commences when a student is admitted to a course of study leading to the award of a degree, diploma or certificate. There are maximum periods and in some cases minimum periods of candidature depending on the award course and whether the candidate is a full-time or part-time student.

Census date

The date at which a student's enrolment, load and HECS liability are finalised before this information is reported to DEST. (See also HECS.)

Ceremony

(See Graduation ceremony.)

Chancellor

The non-executive head of the University. An honorary position, the Chancellor presides over meetings of the University's governing body, the Senate, and important ceremonial occasions such as graduations.

Clinical experience

Students undertake clinical placements in a professional environment as part of their course requirements. Many require University approved supervision. In order to undertake clinical placements a student may be required to fulfil additional requirements.

College of Health Sciences

Consists of the Faculties of Dentistry; Health Sciences; Medicine; Nursing; and Pharmacy.

College of Humanities and Social Sciences (CHASS)

Consists of the Faculties of Arts; Economics and Business; Education; Law; the Sydney College of the Arts; and the Sydney Conservatorium of Music.

College of Sciences and Technology (CST)

Consists of the Faculties of Agriculture, Food and Natural Resources; Architecture; Engineering; Rural Management; Science; and Veterinary Science.

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

A combined degree is a single program with a single set of course resolutions leading to the award of two degrees (unless otherwise specified in the resolutions). (See also Combined course.)

Commencement date

The date a student commences candidature.

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. There are different organisations for undergraduate and postgraduate students.

The student organisations are specific to different campuses. The organisations at campuses other than Camperdown and Darlington include: the Conservatorium Student Association, the Cumberland Student Guild, the Orange Agricultural College Student Association and the Student Association of Sydney College of the Arts. (See also Compulsory subscription exemption, Joining fee, Life membership.)

Compulsory subscription exemption

Students of a certain age or those with disabilities or medical conditions may be exempt from the subscription to the sports body.

Conscientious objectors 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.)

Confirmation of Enrolment form (COE)

This form is issued to each student after enrolment, showing the course and the units of study in which the student is enrolled, together with the credit point value of the units of study 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.

Conjoint ventures

Two or more institutions cooperate to provide a unit or course of study to postgraduate coursework students. Arrangements exist between individual departments at the University of Sydney and individual departments at the University of New South Wales (UNSW) and the University of Technology Sydney (UTS), whereby students enrolled for a degree at one institution complete one or more units of study at the other institution to count towards the award program at their "home" institution.

Continuing professional education

A process which provides a number of programs of continuing education courses for professionals as they move through their career. These programs are presently administered by the Centre for Continuing Education and a number of departments and foundations across the University. This process supports the whole of life learning concept and involves the maintenance of a long term relationship between the student and the University.

Convocation

The body comprising all graduates of the University.

Core unit of study

A unit of study that is compulsory for a particular course or subject area. (See also Unit of study.)

Corequisite

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.)

Cotutelle Scheme

Agreement between the University and any overseas university for joint supervision and examination of a PhD student as part of an ongoing cooperative research collaboration. If successful, the student receives a doctorate from both universities with each testamur acknowledging the circumstances under which the award was made.

Course

An undertaking of study at the University of Sydney

Award course

A formal course of study that will see attainment of a recognised award. Award courses are approved by Senate, on the recommendation of the Academic Board. The University broadly classifies courses as undergraduate, postgraduate coursework or postgraduate research. (See also Bachelor's degree, Course rules, Diploma, Doctorate, Major, Master's degree, Minor, PhD, Stream.)

Non-award course

Studies undertaken by students who are not seeking an award from the University. (See also Cross-institutional enrolment.)

Coursework

An award course not designated as a research award course. While the program of study in a coursework award course may include a component of original, supervised, other forms of instruction and learning normally will be dominant.

Research

A course in which at least 66 per cent of the overall course requirements involve students in undertaking supervised research, leading

to the production of a thesis or other piece of written or creative work, over a prescribed period of time.

Course alias

A unique five character alpha-numeric code which identifies a University course.

Course code

(See Course alias.)

Course enrolment status

A student's enrolment status in a course is either "enrolled" or "not enrolled". "Not enrolled" reasons include: cancelled; suspended; under examination; or terminated. (See also Cancellation, Candidature, Course leave, Enrolment, Enrolment variation, Terminated, Under examination.)

Course leave

Students 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. 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 formally reapply for admission. (See also Progression.)

Course rules

Rules which govern the allowable enrolment of a student in a course. Course rules may be expressed in terms of types of units of study taken, length of study, and credit points accumulated, e.g. 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, e.g. a candidate must have completed a minimum of 144 credit points. (See also Award course, Corequisite, Prerequisite.)

Course suspension

See Course leave.

Course transfer

A transfer occurs when a student changes from one course in the University to another course in the University without the requirement for an application and selection process (e.g. from a PhD to a master's program in the same faculty).

Credit

The recognition of previous studies successfully completed at this University, or another university or tertiary institution recognised by the University of Sydney, as contributing to the requirements of the course to which the applicant requesting such recognition has been admitted. Credit may be granted as specified credit or non-specified credit.

Specified credit
The recognition of previously completed studies as directly equivalent to units of study.

Non-specified credit
A "block credit" for a specified number of credit points at a particular level. These credit points may be in a particular subject area but are not linked to a specific unit of study.
(See also AAM - Annual average mark, Waiver, Weighted average mark (WAM).)

Credit points

The value of the contribution each unit of study provides towards meeting course completion requirements. Each unit of study will have a credit point value assigned to it. The total number of credit points required for completion of award courses will be specified in the Senate Resolutions relevant to the award course.

Cross-institutional enrolment

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 unit of study is being undertaken. Students pay compulsory subscriptions to one university only (usually their home university, i.e. the university which will award their degree). (See also Non-award course).

Course enrolment status

A student's enrolment status in a course is either "enrolled" or "not enrolled". "Not enrolled" reasons include: cancelled, suspended, under examination or terminated. (See also Cancellation, Candidature, Course leave, Enrolment, Enrolment variation, Terminated, Under examination.)

D

The Data Audit Committee's role is to oversee the integrity and accuracy of the course and unit of study data as strategic University data. It also advises the Academic Board on suggested policy changes related to course and unit of study data. A sub-committee of the VCAC Enrolment Working Party, it is chaired by the Registrar, with membership including the deans, the Student Centre, FlexSIS and the Planning Support Office.

Deadlines (Enrolment variations)

(See Enrolment variation.)

Deadlines (Fees)

The University has deadlines for the payment of fees (e.g. HECS, compulsory subscriptions, course fees). 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, Cancellation.)

Dean

The head of a faculty, or the principal or director of a college (such as the Sydney 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 Dean's Certificates. In faculties that do, qualified students have "Dean's Certificate" noted on their academic record.

Deferment (Deferral)

See Admission (deferment), Course leave.

Degree

See also Award course, Bachelor's degree.

Delivery mode

Indicates how students receive the instruction for a unit of study. The delivery mode must be recorded for each unit as distinct from the attendance mode of the student, i.e. an internal student may take one or more units by distance mode and an external student may attend campus for one or more units.

Distance education
Where subject matter is delivered in a more flexible manner, such as correspondence notes, and student may only attend campus if required. (See also Extended semester, Distance education, International - off shore.)

Intensive on campus
Core content is delivered with support learning in an intensive (one or more days) format on campus. Participation is usually compulsory. Previously this may have been called residential, block mode, or weekend workshop.

On campus (normal)
Attendance of scheduled lectures, tutorials etc at a campus of the University.

Department
(See School.)

Department of Education, Science and Training (DEST)
The Commonwealth Government department responsible for higher education.

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. (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, and considered by the relevant department or faculty body. Decisions are recorded and letters are forwarded to applicants advising them of the outcome. (See also Admission, UAC.)

Disability information
Students may inform the University of any temporary or permanent disability which affects their life as a student. Disability information is recorded but it is only available to particular authorised users because of its sensitive nature.

Disciplinary action
Undertaken as the result of academic or other misconduct, e.g. plagiarism, cheating, security infringement, criminal activity.

Discipline
A defined area of study, for example, chemistry, physics, economics.

Discipline group
A DEST code used to classify units of study 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 written exposition of a topic which 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.

Distance education
Where a student does not attend campus on a daily basis for a given course or unit of study. (See also Delivery mode, Extended semester.)

Doctorate
A high-level postgraduate award. 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. (See also Award course, PhD.)

Domestic Student
A student who is not an international student. See also Local student.)

Double degree
A double degree is a program where students are permitted by participating faculties (and/or by specific resolutions within a single award) to transfer between courses in order to complete two awards.

Downgrade
Where a student enrolled in a PhD reverts to a master's by research, either on the recommendation of the University on the basis that the research they are undertaking is not at an appropriate level for a PhD; or at the student's own request, for personal or academic reasons.

E

Earliest date
(See Research candidature.)

Equivalent full-time student unit (EFTSU)
The equivalent full-time student unit (EFTSU) is a measure of student load based on the workload for a student undertaking a full year of study in a particular course. A student is then recorded as having generated one EFTSU. (See also Load, Stage.)

Equivalent full-time student load (EFTSL)
The equivalent full-time student load (EFTSL) for a year. It is a measure, in respect of a course of study, of the study load for a year of a student undertaking that course of study on a full-time basis, (effective 1 January 2005)

Embedded courses
Award courses in the Graduate Certificate, Graduate Diploma and Master's degree by coursework sequence which allow unit of study credit points to count in more than one of the awards, e.g. the Graduate Certificate in Information Technology, Graduate Diploma in Information Technology and Master of Information Technology.

Enrolment
A student enrols in a course by registering with the supervising faculty in the units of study to be taken in the coming year, semester or session.

Commencing
An enrolment is classified as commencing if a student has enrolled in a particular degree or diploma for the first time.

Continuing
Students already in a course at the University re-enrol each year or semester. Most continuing students are required to pre-enrol. (See also Pre-enrolment.)

Enrolment list
A list of all currently enrolled students in a particular unit of study. (See also Unit of study.)

Enrolment status
(See Course enrolment status.)

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.)

Examination
A set of questions or exercises evaluating on a given subject given by a department or faculty. (See Examination period, Assessment.)

Examination period
The time set each semester for the conduct of formal examinations.

Examiner (Coursework)
The person assessing either the written/oral examination, coursework assignments, presentations, etc of a student or group of students.

Exchange student
Either a student of the University of Sydney 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.

Exclusion

A faculty may ask a student whose academic progress is considered to be unsatisfactory to "show good 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 or faculty. 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 University Calendar. (See also Progression, Senate appeals.)

Exemption

A decision made at a sub-unit of study level to allow a student to complete a unit of study without also completing all the prescribed components of coursework and/or assessment. (See also Credit, Waiver.)

Expulsion

The ultimate penalty of disciplinary action is to expel the student from the University. The effect of expulsion is:

- the student is not allowed to be admitted or to re-enrol in any course at the University;
- the student does not receive their results;
- the student is not allowed to graduate; and
- the student does not receive a transcript or testamur.

Extended semester

A distance-learning student may be allowed more time to complete a module or program if circumstances beyond the student's control, e.g. drought, flood or illness, affect the student's ability to complete the module or program in the specified time. (See also Distance education.)

External

(See Attendance mode, Distance education.)

External transcript

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 units of study attempted within each course together with the result. It also acknowledges prizes the student has received. Marks can be included or omitted, as required. (See also Academic transcript, Internal transcript.)

F

Faculty

A formal part of the University's academic governance structure, consisting mainly of academic staff members and headed by a dean, which is responsible for all matters concerning the award courses that it supervises. Usually, a faculty office administers the faculty and student or staff inquiries related to its courses. The University Calendar sets out the constitution of each of the University's faculties. (See also Board of Studies, Supervising faculty.)

Fee-paying students

Students who pay tuition fees to the University and are not liable forHECS.

Flexible learning

(See Delivery mode, Distance education.)

Flexible start date

Full fee-paying distance students are not restricted to the same enrolment time frames as campus-based or HECS students.

Flexible Student Information System (FlexSIS)

The computer-based Flexible Student Information System at the University of Sydney. FlexSIS holds details of courses and units of study being offered by the University and the complete academic records of all students enrolled at the University.

Formative assessment

(See Assessment.)

Full-time student

(See also Attendance pattern, EFTSU.)

G

Grade

The outcome for a unit of study linked with a mark range. For example, a mark in the range 85-100 attracts the grade "high distinction" ("HD"). (See also Mark.)

Grade	Description	Comment
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 units of study 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 unit of study.
PGON	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 — e.g. "no more than one sixth of the total credit points for a course can be made up from PCON results".
F	Fail	A mark of 0-49. This grade may be used for students with marks of 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 (i.e. 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 this date if the student has made out a special case based on illness or misadventure.
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: 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 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 (e.g. Honours).

Graduand

A student who has completed all the requirements for an award course but has not yet graduated. (See also Graduation, Potential graduand.)

Graduate
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.)

Graduation
The formal conferring of awards either at a ceremony or in absentia. (See also In absentia, Potential graduand.)

Graduation ceremony
A ceremony where the Chancellor confers awards upon graduands.

Group work
Means a formally established project to be conducted by a number of students in common, resulting in a single piece of assessment or a number of associated pieces of assessment. (See also Legitimate cooperation.)

H

Head of department (HOD)
The head of the academic unit which has responsibility for the relevant unit of study, or equivalent program leader.

Higher doctorates
See Award course.

HECS (Higher Education Contribution Scheme)
All students, unless they qualify for an exemption, are obliged to contribute towards the cost of their education under the Higher Education Contribution Scheme. These contributions are determined annually by the Commonwealth Government. This scheme will cease in its current form from 1 January, 2005.

Honorary degrees
A degree *honoris causa* (translated from the Latin as "for the purpose of honouring") is conferred on a person whom the University wishes to honour. Long-standing full-time members of the University's academic staff who are not graduates of the University may be considered by Senate, upon their retirement, for admission ad eundem gradum, to an appropriate degree of the University.

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 I, Class II - which may have two divisions or, Class **III).**

NSW Higher School Certificate (HSC)
The NSW Higher School Certificate (HSC), 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.

I

In absentia
Latin for "in the absence of". Awards are conferred in absentia when graduands do 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 Sydney Conservatorium of Music and BMus students on the Camperdown Campus have an instrumental teacher appointed. (See also Advisor, Associate supervisor, Research supervisor, Supervision.)

Internal mode
(See Attendance mode.)

Internal transcript
A record of a student's academic record for the University's own internal use. It includes the student's name, student identifier (SID), address, all courses in which the student was enrolled and the final course result, and all units of study attempted within each course together with the unit of study result. (See also Academic transcript, External transcript.)

International student
Any student who is not an Australian or New Zealand citizen or a permanent resident of Australia is an international student. An international student is required to hold a visa that allows study in Australia and may be liable for international tuition fees.

Fee-paying
A private International Student who is liable to pay tuition fees for their studies with the University.

Fee-paying — Outgoing exchange
An international fee-paying student undertaking short term study at a recognised overseas institution with which the University has a student exchange agreement. Exchange study counts towards the student's University of Sydney award and students remain enrolled in their University of Sydney course during the period of exchange.

International - cross-institutional
An international fee paying student undertaking non-award study at the University on a cross-institutional basis. They are liable to pay fees for the study they undertake at the University, but there is no compliance reporting requirement, which rests with their "home" institution.

International — Sponsored
A private international student who is fully sponsored for his/her tuition; his/her sponsorship may also cover Overseas Health Cover and Compulsory Subscriptions.

Offshore studies
International offshore students undertake their program of study at one of the University's offshore campuses and hence do not enter Australia; therefore they do not require a visa. The are distinct from international students who are on outbound exchange programs as they never enter Australia during their program of study.

Short course
An international fee-paying student undertaking a short course with the University of Sydney comprising such programs as international development programs, executive training or study visits. The study undertaken by these students is non-award and generally a student visa is not required.

Sponsored award
An international student sponsored by the Australian government, undertaking a program of study at the University. Currently Australian Development Scholarships holders, funded by AusAID, are the only students in this category. These students are fully sponsored for their tuition and other costs such as travel and health cover, and are paid a stipend.

Study Abroad
An international student who is undertaking short-term study at the University under the Study Abroad scheme. Study Abroad students must have completed at least one year of study towards a degree at a recognised institution in their home country and are continuing towards the degree of their home institution.

(See also Local student, Student type.)

J

Joining fee

Students enrolling for the first time pay a joining fee in addition to the standard subscription for the University of Sydney Union or equivalent student organisation. (See also Compulsory subscription.)

L

Leave

See Course leave.

Legitimate cooperation

Any constructive educational and intellectual practice that aims to facilitate optimal learning outcomes through interaction between students. (See also Group work.)

Life membership

Under some circumstances (e.g. after five full-time years of enrolments and contributions) students may be granted life membership of various organisations. This means they are exempt from paying yearly fees. (See also Compulsory subscriptions.)

Load

The sum of the weights of all the units of study in which a student is enrolled. The weight is determined by the proportion of a full year's work represented by the unit of study in the degree or diploma for which the student is a candidate. Student load is measured in terms of Equivalent full-time student units (EFTSU). (See also Equivalent full-time student units (EFTSU).)

Local Student

Either an Australian or New Zealand citizen or Australian permanent resident. New Zealand citizens are required to pay their Higher Education Contribution Scheme (HECS) fees upfront. (See also Domestic student, HECS, International student.)

M

Major

A field of study, chosen by a student, to represent their principal interest this would consist of 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 awarded upon the graduands assessment of study. (See also Award course, Minor, Stream.)

Major timetable clash

The term used 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 simultaneously.

Mark

An integer (rounded if necessary) from 0 to 100 indicating a student's performance in a unit of study. (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 - coursework, Course - research.)

Minor

Studies undertaken to support a Major. 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 awarded upon the graduand's assessment of study. (See also Award course, Major, Stream.)

Mixed mode

(See Attendance mode.)

Mutually exclusive units of study

(See Prohibited combinations of units of study.)

N

Non-award course

(See Course.)

Non-standard session

A teaching session other than the standard February and August sessions - e.g. Summer School, in which units of study are delivered and assessed in an intensive mode during January. (See also Semester, Session.)

O

Orientation Week

Orientation or "O Week", takes place in the week before lectures begin in Semester One. 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.

P

Part-time student

(See Attendance mode, Attendance pattern, Equivalent full-tme student units (EFTSU).)

Permanent home address

The address used for all official University correspondence with a student, both inside and outside of semester time (e.g. during semester breaks), unless the student provides a different overridden by semester address for use during the semester. (See also Semester address.)

PhD

The Doctor of Philosophy (PhD) and other doctorate awards are the highest awards available at the University. A PhD course is normally purely research-based; the candidate submits a thesis that is an original contribution to the field of study. (See also Award course, Doctorate.)

Plagiarism

Presenting another person's ideas, findings or work as one's own by copying or reproducing them without the acknowledgement of the source. (See also Academic dishonesty.)

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. (See also Course - Coursework, Course - Research)

Postgraduate Education Loans Scheme (PELS)

An interest-free loans facility for eligible students who are enrolled in fee-paying, postgraduate non-research courses. It is similar to the deferred payment arrangements available under the Higher Education Contribution Scheme (HECS). This scheme will cease in this manner from 1 January, 2005, and will be replaced by the FEE-HELP scheme.

Potential graduand

A student who has been identified as being eligible to graduate on the satisfactory completion of their current studies. (See also Graduand, Graduation.)

Pre-enrolment

Pre-enrolment - also known as provisional re-enrolment - takes place in October, when students indicate their choice of unit of study enrolment for the following year. After results are approved, pre-enrolment students are regarded as enrolled in those units of study for which they are qualified. Their status is "enrolled" and remains so provided they pay any money owing and comply with other requirements by the due date. Students who do not successfully pre-enrol 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. (See also Enrolment.)

Prerequisite

A unit of study that is required to be successfully completed before another unit of study can be attempted. Prerequisites can be mandatory (compulsory) or advisory. (See also Assumed knowledge, Corequisite, Waiver, Qualifier.)

Prizes

Awarded in recognition of outstanding performance, academic achievement or service to the community or University.

Probationary candidature

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.

Professional practice

Students undertake placement in a professional practice as a part of their course requirements. May require University approved supervision. Professional placements are located in a wide range of professional practices environments, and may not require additional criteria to be fulfilled.

Progression

Satisfactory progression is satisfying all course and faculty rules (normally assessed on an annual basis) to enable the completion of the chosen award within the (maximum) completion time allowed. (See also Exclusion.)

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. (See also unit of study.)

Provisional re-enrolment

See Pre-enrolment.

Q

Qualification

An academic attainment recognised by the University.

Qualifier

A mandatory (compulsory) prerequisite unit of study which must have a grade of pass or better. (See also Assumed knowledge, Corequisite, Prerequisite, Waiver.)

R

Recycling

The submission for assessment of one's own work, or of work which substantially the same, which has previously been counted towards the satisfactory completion of another unit of study, and credited towards a university degree, and where the examiner has not been informed that the student has already received credit for that work.

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 supervisor will be a full-time member of the academic staff or a person external to the University recognised for 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.)

Result processing

Refers to the processing of assessment results for units of study. For each unit of study, departments tabulate results for all assessment activities and assign preliminary results. (See also Assessment, Formative assessment, Examination period, Summative assessment)

Result processing schedule

The result processing schedule will be determined for each academic cycle. All departments and faculties are expected to comply with this schedule. (See also Assessment, Examination period, Result processing.)

Result

The official statement of a student's performance in each unit of study attempted as recorded on the academic transcript, usually expressed as a mark and grade. (See also Grade, Mark.)

Research Training Scheme (RTS)

The RTS provides Commonwealth-funded higher degree by research (HDR) students with an "entitlement" to a HECS exemption for the duration of an accredited HDR course, up to a maximum period of four years full-time equivalent study for a doctorate by research and two years full-time equivalent study for a master's by research.

S

Scholarships

Financial or other form of support made available to enable students to further their studies. (See also Bursaries.)

School

A school or academic unit shall encourage and facilitate teaching, scholarship and research and coordinate the teaching and examining duties of members of staff in the subjects or courses of study with which it is concerned.

Semester

A half-yearly teaching session whose dates are determined by the Academic Board. Normally all undergraduate sessions will conform to the semesters approved by the Academic Board. Any offering of an undergraduate unit not conforming to the semester dates (non-standard session) must be given special permission by the Academic Board. (See also Session, Non-standard session.)

Semester address

The address to which all official University correspondence is sent during semester time, if it is different to the permanent address.

Senate

The governing body of the University. (See the University Calendar for more details of its charter and powers.)

Senate appeals

Senate appeals are held for those students who, after being excluded by a 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, i.e. the department, faculty, board of study and, in the case of postgraduates, the Committee for Graduate Studies. (See also Exclusion.)

Session

Any period of time during which a unit of study is taught. A session differs from a semester in that it need not be a six-month teaching period, but it cannot be longer than six months. Each session maps to either Semester One or Two for DEST reporting purposes. Session offerings are approved by the relevant dean, taking into account all the necessary resources, including teaching space and staffing. The Academic Board must approve variation to the normal session pattern. (See also Semester, Non-standard teaching period.)

Session address

(See Semester address.)

Short course

A fee paying student undertaking a short course with the University of Sydney comprising professional development, executive training etc. The study undertaken by these students is a non-award course.

Show cause

(See Progression, Exclusion.)

Special consideration

Candidates who suffer serious illness or misadventure which may affect performance in any assessment, may request that they be given special consideration in relation to the determination of their results.

Sponsorship

Financial support of a student by a company or government body.

Stage

A normal full-time course of study taken in a year. (See also Course rules, EFTSU, Progression.)

Stream

A defined award course, which requires the completion of set units of study as specified by the course rules for the particular stream, in addition to the core program specified by the course rules. A stream will appear with the award course name on testamurs, e.g. Bachelor of Engineering in Civil Engineering (Construction Management). (See also Award course, Major, Minor.)

Student

Student means a person enrolled as a candidate for an award course or unit of study.

Student identifier (SID)

A nine-digit number which uniquely identifies a student at the University.

Student ID Card

All students who enrol are issued with an identification card. The card includes the student's name, SID, the course code, a library borrower's bar code and a pas sport-style photo. 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 progress rate (SPR)

A calculation which measures the rate at which load undertaken is passed annually in each award program.

Student type

Student type identifies whether a student is local or international and the type of study the student is undertaking. (See also International student, Domestic student, Exchange student.)

Study Abroad program

A scheme administered by the International Office which allows international students who are not part of an exchange program to take units of study at the University of Sydney, but not towards an award program. In most cases the units of study taken here are credited towards an award at their home institution. (See also Exchange student.)

Subject area

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, e.g. the unit of study "History of Momoyama and Edo Art" may count towards the requirements for the subject areas "Art History and Theory" and "Asian Studies".

Summative assessment

See Assessment.

Summer School

(See Sydney Summer School.)

Supervising faculty

The faculty which has the responsibility for managing the academic administration of a particular course, i.e. 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. Further, in the case where one course is jointly offered by two or more faculties (e.g. the Liberal Studies course), a joint committee may make academic decisions about candidature and the student may be assigned a supervising faculty for administration.

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 role. (See also Advisor, Associate supervisor, Instrumental supervisor/teacher, Research supervisor.)

Suppression of results

Results for a particular student can be suppressed by the University when the student has an outstanding debt to the University; or the student is facing disciplinary action. A student may also request a suppression for personal reasons.

Suspension

(See Course leave.)

Sydney Summer School

A program of accelerated, intensive study running for approximately six weeks during January and February each year. Both undergraduate and postgraduate units are offered. Summer School provides an opportunity for students at Sydney and other universities to catch up on needed units of study, to accelerate completion of a course or to undertake a unit that is outside their award course. All units attract full fees and enrolled students are also liable for compulsory subscriptions. Some fee-waiver scholarships are available.

T

Teaching department

(See School.)

Teaching end date

Official finish date of formal timetabled classes.

Teaching start date
Official commencement date of formal timetabled classes.

Terminated
Term used when a student's candidature has been officially closed because they are not able to complete the Course requirements. (See also Candidature.)

Testamur
A certificate of award provided to a graduand, usually at a graduation ceremony. The Award conferred will be displayed along with other appropriate detail.

Thesis
A major work that is the product of an extended period of supervised independent research. (See also Course -- research.)

Timetable
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.

U

Universities Admissions Centre (UAC)
The UAC receives and processes applications for admission to undergraduate courses at recognised universities in NSW and the ACT. Most commencing, local undergraduate students at the University apply through the UAC.

Universities Admission Index (UAI)
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, and is a number between 0.00 and 100.00 with increments of 0.05.

Under examination
Indicates that a research student has submitted their written work (thesis) for assessment, and is awaiting the finalisation of the examiners' outcome and recommendation.

Undergraduate
A term used to describe both a course leading to a diploma or bachelor's degree and a student enrolled in such a course.

Unit of study
Unit of study or unit means a stand-alone component of an award course. Each unit of study is the responsibility of a department. (See also Prohibited combinations of unit of study.)

Unit of study enrolment status
The enrolment status indicates whether the student is still actively attending the unit of study (i.e. currently enrolled) or is no longer enrolled. (See also Discontinuation or Cancellation.)

Unit of study level
Units of study are divided into Junior, Intermediate, Senior, Honours, Year 5, and Year 6. 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 a student qualified for the award of an undergraduate honours degree (or some master's degrees), whose academic performance is judged to be outstanding.

Upgrade
Where a student enrolled in a Master's by research course is undertaking research at such a standard that either the University recommends that the student upgrade their degree to a PhD, or the student seeks to upgrade to a PhD and this is supported by the University.

USYDnet
The University of Sydney's intranet system. 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.

V

Variation of enrolment
(See Enrolment variation.)

Vice-Chancellor and Principal
The chief executive officer of the University, responsible for its leadership and management. The Vice-Chancellor and Principal is head of both academic and administrative divisions.

W

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. Unlike credit, waivers do not involve a reduction in the number of credit points required for a course.
(See also Credit, Exemption.)

Winter School
An intensive session offered by the University during the mid-year break.

Weighted average mark (WAM)
This mark uses the unit of study credit point value in conjunction with an agreed "weight". The formula for this calculation is:

$$WAM = \frac{\sum (W_c \times M_c)}{\sum (W_c)}$$

Where Wc is the weighted credit point value - ie, the product of the credit point value and the level of weighting of 1, 2, 3, or 4 for a first, second, third or fourth year unit of study respectively; and where Mc is the greater of 45 or the mark out of 100 for the unit of study.

The mark is the actual mark obtained by the student for the unit of study, or in the case of a failing grade with no mark - 0. Pass/Fail assessed subjects and credit transfer subjects (from another institution) are excluded from these calculations; however, the marks from all attempts at a unit of study are included. (Effective from 1 January 2004.)

In addition, faculties may adopt other average mark formulae for specific progression or entry requirements. If such a formula is not specified in the faculty resolutions, the formula outlined above is used. (See also WAM weight.)

WAM weight

A weight assigned to each unit of study to assist in the calculation ofWAMs.

Y

Year of first enrolment (YFE)

The year in which a student first enrols at the University. (See also Commencement date.)

Youth Allowance

Youth Allowance is payable to a full-time student or trainee aged 16-24 years of age who is enrolled at an approved institution such as a school, college, TAFE or university, and undertaking at least 15 hours a week face-to-face contact.

Science subject area index

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

Abnormal Psychology *see* Psychology

Acoustics *see* Physics

Algebra *see* Mathematics and Statistics

Analysis *see* Mathematics and Statistics

Animal Physiology *see* Biological Sciences, BMedSc, Physiology

Analytical Chemistry *see* Agricultural Chemistry and Soil Science, Chemistry

Anatomy *see* Anatomy and Histology

Applied Mathematics *see* Mathematics and Statistics

Applied Physics *see* Physics

Artificial Intelligence *see* Computer Science

Astronomy *see* Physics

Astrophysics *see* Physics

Atomic Physics *see* Physics

Bacteriology *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biotechnology), Microbiology

Beach Dynamics *see* Marine Studies, Geography

Biodegradation *see* Microbiology, Agricultural Chemistry and Soil Science, BSc (Molecular Biotechnology)

Biological Chemistry *see* Agricultural Chemistry and Soil Science, Biochemistry, BSc (Molecular Biotechnology), Chemistry

Bioinformatics *see* Biological Science, Computer Science, Microbiology, BSc (Bioinformatics), BSc (Molecular Biotechnology)

Biomaterials *see* BSc (Molecular Biotechnology)

Bioremediation *see* Biological Sciences, Microbiology, Agricultural Chemistry and Soil Science, BSc (Molecular Biotechnology)

Biotechnology *see* Biochemistry, Biological Sciences, BSc (Molecular Biotechnology), Chemistry, Microbiology, Physiology

Behavioural Genetics *see* Biological Sciences

Behavioural Science *see* Psychology
Biomathematics see Mathematics and Statistics

Biophysical Chemistry *see* Biochemistry, BSc (Molecular Biotechnology), Chemistry

Biophysics *see* Physics

Botany *see* Biological Sciences

Carbohydrate Chemistry *see* Agricultural Chemistry and Soil Science, Biochemistry, BSc (Molecular Biotechnology), Chemistry

Catalysis *see* Biochemistry, Chemistry

Category Theory *see* Mathematics and Statistics

Cancer *see* Biochemistry, BMedSc, Cell Pathology, Immunology, Physiology

Cardiovascular disease *see* Cell Pathology

Cardiovascular therapeutics *see* Pharmacology, BMedSc

Cell Biology *see* Biochemistry, Biological Sciences, BMedSc, Cell Pathology, Histology, Immunology, Microbiology, Physiology

Chaos *see* Physics, Mathematics and Statistics

Chemotherapy *see* Biochemistry, Chemistry, Microbiology, Pharmacology

Clay Mineralogy *see* Agricultural Chemistry and Soil Science

Coastal Morphodynamics *see* Marine Studies, Geography

Coastal Zone Management *see* Marine Studies, Geography

Cognitive Science *see* Psychology

Colloid Science *see* Chemistry, Key Centre for Polymer Colloids, BSc (Molecular Biotechnology)

Communicating Science *see* History and Philosophy of Science

Communication *see* Psychology

Communications Technology *see* Computer Science

Computational Algebra *see* Mathematics and Statistics

Computational Biology *see* BSc (Bioinformatics), BSc (Molecular Biotechnology)

Computational Chemistry *see* Chemistry

Computational Physics *see* Physics

Computational Science *see* Physics

Computer-aided Drug Design *see* Biochemistry, BMedSc, BSc (Molecular Biotechnology), Chemistry, Pharmacology

Computer Design *see* Computer Science

Computer Graphics *see* Computer Science

Computer Cartography *see* Geography

Computer Networks *see* Computer Science

Computer Programming *see* Computer Science

Condensed Matter Physics *see* Physics

Conservation *see* Biological Sciences, BSc (Molecular Biotechnology), Geography, Geology and Geophysics

Cosmology *see* Physics, Mathematics and Statistics

Counselling Psychology *see* Psychology

Cryptography *see* Mathematics and Statistics

Crystallography *see* Biochemistry, Chemistry, Geology and Geophysics

Data Analysis *see* Mathematics and Statistics, Physics

Index

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney website. Please visit "http://www.usyd.edu.au/handbooks/".

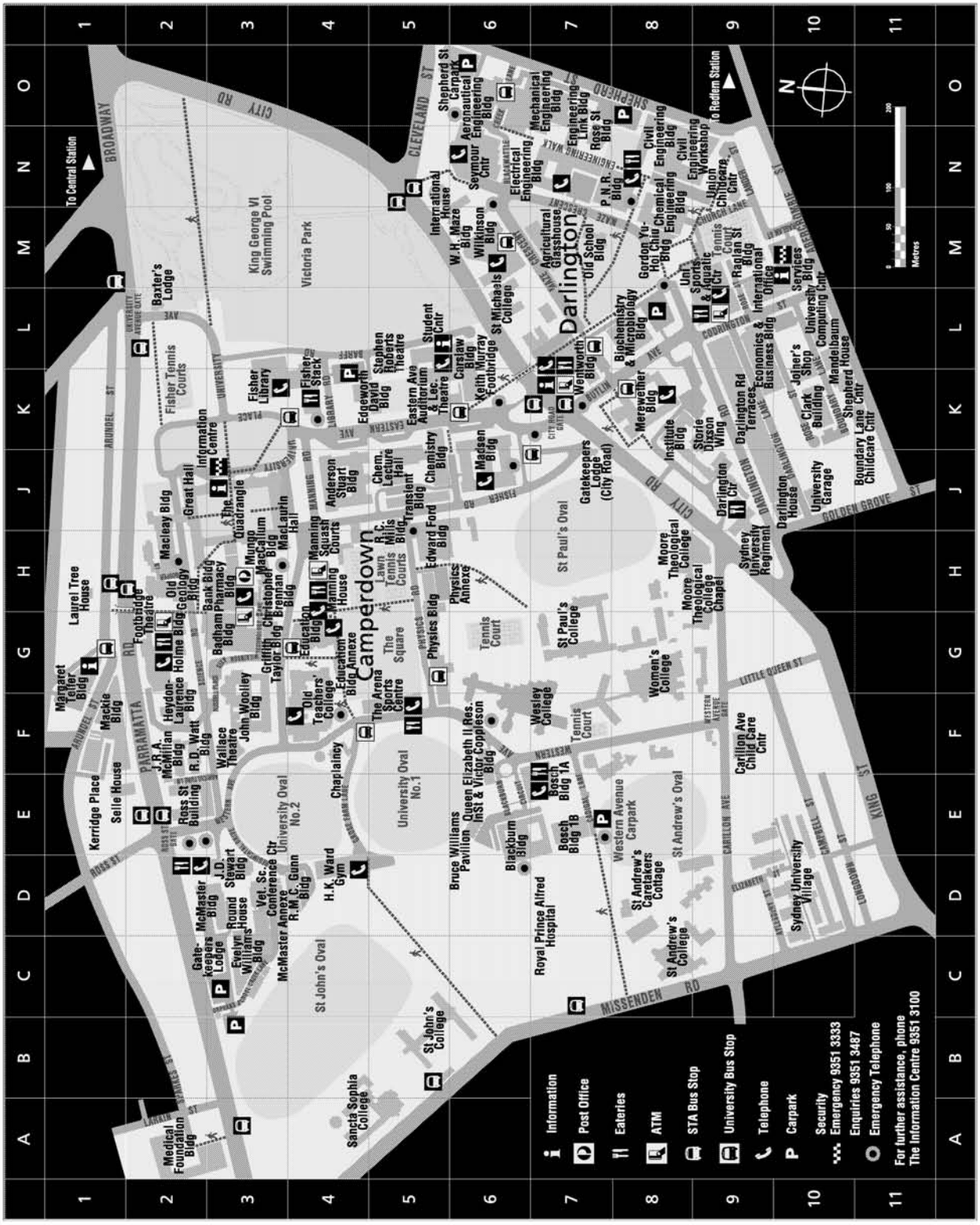
C

D

O

S

Camperdown / Darlington campus map



University Buildings

06 Aeronautical Engineering Building
J4 Anderson Stuart Building
G3 Badham Building
H3 Bank Building
L2 Baxter's Lodge
L8 Biochemistry and Microbiology Building
E6 Blackburn Building
E7 Bosch Building 1A
E7 Bosch Building IB
E6 Bruce Williams Pavilion
L6 Carslaw Building
F4 Chaplaincy
M8 Chemical Engineering Building
J5 Chemistry Building
H3 Christopher Brennan Building
N8 Civil Engineering Building
N9 Civil Engineering Workshop
K10 Clark Building
J9 Darlington Centre
J10 Darlington House
K9 Darlington Road Terraces
K5 Eastern Avenue Auditorium and Lecture Theatre Complex
L9 Economics and Business Building
K4 Edgeworth David Building
G4 Education Building
G4 Education Building Annexe
H5 Edward Ford Building
N7 Electrical Engineering Building
N7 Engineering Link Building
C3 Evelyn Williams Building
K3 Fisher Library
K4 Fisher Library Stack
C3 Gatekeeper's Lodge
J7 Gatekeeper's Lodge (City Road)
M8 Gordon Yu-Hoi Chui Building
J2 Great Hall
G3 Griffith Taylor Building
D4 H.K.Ward Gymnasium
F2 Hey don-Laurence Building
G2 Holme Building
K8 Institute Building
N5 International House
F2 J.R.A.McMillan Building
D3 LD.Stewart Building
F3 John Woolley Building
Fl Mackie Building
H3 MacLaurin Hall
H2 Macleay Building
Gl Margaret Telfer Building
J6 Madsen Building
H4 Manning House
H4 Manning Squash Courts
D3 McMaster Annexe
D3 McMaster Building
06 Mechanical Engineering Building
A2 Medical Foundation Building
K8 Merewether Building
H3 Mungo MacCallum Building
H2 Old Geology Building
M7 Old School Building
F4 Old Teachers' College
H3 Pharmacy Building
H6 Physics Annexe
G5 Physics Building
N8 P.N.R.Building
E6 Queen Elizabeth II Research Institute
H5 R.C.Mills Building
F2 R.D.Watt Building
D4 R.M.C.Gunn Building
M9 Raglan Street Building
N7 Rose Street Building
E2 Ross Street Building
G2 Science Road Cottage
El Selle House
M10 Services Building
N6 Seymour Centre
K10 Shepherd Centre
06 Shepherd Street Carpark
L5 Stephen Roberts Theatre
K9 Storie Dixson Wing
F5 The Arena Sports Centre
J3 The Quadrangle
J5 Transient Building
L10 University Computing Centre
J10 University Garage
M9 University Sports and Aquatic Centre
D3 Veterinary Science Conference Centre
E6 Victor Coppleson Building
F3 Wallace Theatre
K7 Wentworth Building
E7 Western Avenue Carpark
M6 W.H.Maze Building
M6 Wilkinson Building

Academic Colleges (offices)

H5 Health Sciences
F4 Humanities and Social Sciences
N8 Sciences and Technology

Childcare Centres

K1l Boundary Lane
F9 Carillon Avenue
HI Laurel Tree House
N9 Union

Colleges and Residential Accommodation

J10 Darlington House
K9 Darlington Road Terraces
N5 International House
L10 Mandelbaum House
A4 Sancta Sophia College
C8 St Andrew's College
B5 St John's College
L6 St Michael's College
G7 St Paul's College
El Selle House
D10 Sydney University Village
F7 Wesley College
G8 Women's College

Computer Access Centres (ITS)

G3 Brennan
G4 Education
K3 Fisher
N7 Link
L6 McGrath (Carslaw)
H3 Pharmacy

Cultural Venues

G2 Footbridge Theatre
H2 Macleay Museum
J3 Nicholson Museum
N6 Seymour Centre
K7 Sir Hermann Black Gallery
M6 Tin Sheds Gallery
J2 War Memorial Art Gallery

Faculties (offices)

F2 Agriculture
M6 Architecture
H3 Arts
K8 Economics and Business
G4 Education and Social Work
N7 Engineering
H5 Medicine
H3 Pharmacy
L6 Science
D3 Veterinary Science

Libraries

M6 Architecture
G3 Badham
H5 Burkitt-Ford
K3 Curriculum Resources
N8 Engineering
K3 Fisher
J6 Madsen
L6 Mathematics
E7 Medical
N6 Music
H6 Physics
H5 S chaeffer Fine Arts

Retail

H3 Australia Post Office
H3 Bank Building
J9 Darlington Centre
G2 Holme Building
H4 Manning House
F5 The Arena Sports Centre
M9 University Copy Centre
K7 University Health Service
M9 University Sports and Aquatic Centre
M9 University Co-op Bookshop
D3 Veterinary Hospital and Clinic
K7 Wentworth Building

Security

M10 Emergency Services
M10 Lost Property
J3 Information Centre
M10 Traffic and Parking

Sports and Recreational Venues

K2 Fisher Tennis Courts
D4 HK Ward Gymnasium
H5 Lawn Tennis Courts
H4 Manning Squash Courts
F5 The Arena Sports Centre
G5 The Square
E5 University Oval No 1
E3 University Oval No2
M9 University Sports and Aquatic Centre

Unions and Associations (offices)

K7 Students' Representative Council (SRC)
M9 Sydney University Postgraduate Representative Association (SUPRA)
M9 Sydney University Sport
G2 University of Sydney Union

University Administration and Services

F3 Business Liaison Office
Fl Careers Centre
Gl Cashier
F1 Centre for Continuing Education
H3 Chancellor
L10 Computing Centre
H3 Development, Alumni Relations and Events
M10 Development Services
H2 Executive Offices
J3 Information Centre
L10 Information Technology S ervices
L9 International Office
Gl Personnel
M10 Printing Services (UPS)
H2 Publications Office
H3 Research Office
M10 Room Bookings and Venue Management
Fl Scholarships Unit
L5 Student Centre
Gl Student Housing
G4 Student Services Unit
K8 Summer School
C3 Veterinary Hospital and Clinic
H2 Vice-Chancellor

The University of Sydney

Faculty of Science Handbook 2006

Amendments

Amendments

Please note that the following Handbook amendments should be read in conjunction with the 2006 Handbooks as published on www.usyd.edu.au/handbooks

- All amendments are listed by item number and referenced by the page to which they refers.
- The relevant Handbook and those amendments listed below are binding and final.
- Inquiries and questions relating to the information below should be directed to the relevant faculty.

Item	Amendment	Handbook page number
1.	**Contact information:** **Discipline of Pathology** Room 501, Blackburn Building D06 Phone: +61 2 9351 2414/2600 Fax: +61 2 93513429 Email: pathdept@med.usyd.edu.au Website: http://www.pathology.usyd.edu.au Head of Department: Professor Nicholas King Academic Advisers Undergraduate: Dr Bob Bao and Professor Nicholas King Honours: Associate Professor Brett Hambly Postgraduate: Dr Roger Pamphlett	**Page 5**
2.	**Undergraduate enrolment advice and policies:** **Physics** Major is offered at the Advanced level.	**Page 12**
3.	**Undergraduate enrolment advice and policies:** **Bachelor of Science and Technology (BST)** **Enrolment Guide** In your Junior year, you should complete: • 12 credit points from the Science subject areas of Mathematics and Statistics; • 12 credit points of Junior units of study from the subject areas of Experimental Science (from Table VIIb); • 12 credit points of Junior units of study from Science, Engineering or Architecture (from Table VIId). • 12 credit points of Junior units of study from Science, Engineering or Architecture. To complete your degree you must gain credit for at least 144 credit points, comprising: • a minimum of 12 credit points in the subject area of Mathematics and Statistics; • a minimum of 12 credit points in Experimental Science units of study from those specified in Table VIIb (2006 Faculty of Science Handbook, Chapter 3); • a minimum of 12 credit points in Science/Technology associated Humanities and Social Sciences units of study from those specified in Table VIIc (2006 Faculty of Science Handbook, Chapter 3); • a minimum of 12 credit points in Technology/Applied Science units of study from those specified in Table VIId (2006 Faculty of Science Handbook, Chapter 3); • a minimum of 72 credit points in senior or intermediate units of study, or in units of study normally taken at second or third year level or higher; • a major, as specified in Table I of the Bachelor of Science, or as listed in Table VIIe (2006 Faculty of Science Handbook, Chapter 3). A major in the BST requires a minimum of 36 credit points at intermediate (2000) and senior (3000) levels, including a minimum of 12 credit points at senior level, except in the case of a major in a Science subject area, which normally requires the completion of 24 credit points of senior-level units of study, in addition to any other units of study specified in the table as compulsory for that major	**Page 48**

<table>
<tr><th>Item</th><th>Amendment</th><th>Handbook Page Number</th></tr>
<tr><td>4.</td><td>
Undergraduate tables and units of study:

Table 1: Bachelor of Science

Cell Pathology Major:

<table>
<tr><td>Cell Pathology</td></tr>
<tr><td>For a major in Cell pathology, the minimum requirement is 24 credit points from:</td></tr>
<tr><td>(i) CPAT 3201 and CPAT 3202; and</td></tr>
<tr><td>(ii) any two of the listed units of study:</td></tr>
<tr><td>Senior units of study</td></tr>
<tr><td>The completion of 6 credit points of MBLG units of study is highly recommended.</td></tr>
<tr><td>CPAT 3201 Pathogenesis of Human Disease 1 6 P At least 6cp intermediate of one of the following: ANAT or BCHM or MBLG or BIOL or HPSC or MICR or PCOL or PHSI, or as the Head of Discipline determines.</td></tr>
<tr><td>CPAT 3202 Pathogenesis of Human Disease 2 6 P At least 6cp intermediate of one of the following: ANAT or BCHM or MBLG or BIOL or HPSC or MICR or PCOL or PHSI, or as the Head of Discipline determines.</td></tr>
<tr><td>HSTO3001, HSTO3002, HSTO3003, HSTO3004, BCHM3071/3971, BCHM3072/3972, BCHM3081/3982, BCHM3082/3982, MICR3011/3911, MICR3012/3912, MICR3022/3922, PHSI 3005/3905 and PHSI 3006/3906.</td></tr>
<tr><td>Information for these Units may be found under the relevant teaching department entries.</td></tr>
</table>
</td><td>Page 62</td></tr>
<tr><td>5.</td><td>
Undergraduate tables and units of study:

Table 1: Bachelor of Science

Neuroscience Major:

<table>
<tr><td>Neuroscience</td></tr>
<tr><td>For a major in Neuroscience, students are required to complete at least 24 credit points from the Senior elective Units of Study listed below.</td></tr>
<tr><td>Intermediate elective units of study</td></tr>
<tr><td>Intermediate units should be chosen from the following Units of Study: ANAT2010 is strongly recommended. ANAT2010, MBLG2771 (or MBLG 2001/2101), MBLG2871 PCOL2011, PCOL2012, PHSI2005/2905, PHSI2006/2906, PSYC2011, PSYC2012.</td></tr>
<tr><td>Senior elective units of study</td></tr>
<tr><td>At least 24 credit points from the following units of study:</td></tr>
<tr><td>PCOL3022/3922, NEUR3001/3901, NEUR3002/3902, NEUR3003/3903, NEUR3004/3904, PSYC3011, PSYC3013, PSYC3014, PSYC3018.</td></tr>
<tr><td>Credit points for senior electives must be selected from all three subject areas, i.e., NEUR and PCOL and PSYC.</td></tr>
</table>
</td><td>Page 75</td></tr>
</table>

<table>
<tr><th>Item</th><th>Amendment</th><th>Handbook page number</th></tr>
<tr><td>6.</td><td>
Undergraduate tables and units of study:

Table 1F: Bachelor of Science (Nutrition)

C. Senior units of study

In order to proceed to the Senior year, candidates for the BSc (Nutrition) must achieve a WAM of 65 in their Intermediate year. Candidates who fail to maintain the required Credit average will be transferred to candidature for the Bachelor of Science degree in their next year of enrolment with full credit for the units of study completed as Bachelor of Science (Nutrition) candidates.

In the Senior year candidates are required to enrol in and complete:

(i) NUTR 3911, 3921, 3912 and 3922;

(ii) BCHM (3082 or 3982) and BCHM (3072 or 3972); and

(iii) AGCH (3025 and 3026) or 12 credit points from the following Senior units of study: BCHM (3071 or 3971), BCHM (3081 or 3981), MICR (3001 or 3901), VIRO (3001 or 3901), NEUR (3001 or 3901), NEUR (3002 or 3902).

Senior units of study

The completion of 6 credit points of MBLG units of study is highly recommended.

<table>
<tr><td>NUTR 3911</td><td>Nutritional Assessment Methods</td><td>6</td><td>P NUTR2911 and NUTR2912 N NUTR3901</td></tr>
<tr><td>NUTR 3921</td><td>Methods in Nutrition Practice</td><td>6</td><td>P NUTR2911 and NUTR2912 N NUTR3901</td></tr>
<tr><td>NUTR 3912</td><td>Community and Public Health Nutrition</td><td>6</td><td>P NUTR2911 and NUTR2912 N NUTR3902</td></tr>
<tr><td>NUTR 3922</td><td>Nutrition and Chronic Disease</td><td>6</td><td>P NUTR2911 and NUTR2912 N NUTR3902</td></tr>
</table>
</td><td>Page 90</td></tr>
<tr><td>7.</td><td>
Undergraduate tables and units of study:

Computational Science Senior units of study:
For a major in Computational Science the minimum requirement is 24 credit points chosen from the core or elective Senior units of study listed for this subject area, of which at least 12 credit points must be from the following core Senior units of study:
COSC 3011 Scientific Computing
COSC 3911 Scientific Computing (Advanced)
COSC 3012 Parallel Computing & Visualisation
COSC 3912 Parallel Computing & Visualisation (Adv)
MATH 3076 Mathematical Computing *
MATH 3976 Mathematical Computing (Advanced)*
*Refer to Mathematics listing in chapter 3 for descriptions of these units of study.

Senior elective units of study for a major in Computational Science are listed in Table I in chapter 3.

COSC 3011 Scientific Computing
6 credit points. B A, B E, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. Dr Nigel Marks. Session: Semester 1. Classes: 2hr lec. & 3hr prac/wk. Assumed Knowledge: Programming experience in MATLAB. Prohibitions: COSC3911, COSC 3001, COSC 3901, PHYS3301, PHYS3901. Assessment: Lab, written exam.
This unit of study provides a senior-level treatment of scientific problem solving using computers. Students will understand and apply a wide range of numerical schemes for solving ordinary and partial differential equations. Linear algebra is used to provide detailed insight into stability analysis, relaxation methods, and implicit integration. A variety of scientific problems are considered, including planetary motion, population
</td><td>Page 142</td></tr>
</table>

Item	Amendment	Handbook page number
7. *(contin.)*	demographics, neutron criticality, traffic flow and quantum mechanics. All coding is performed with MATLAB, and basic programming experience is assumed. *Textbooks* Numerical Methods for Physics, 2nd Edition, by A.L. Garcia. **COSC 3911 Scientific Computing (Advanced)** 6 credit points. B A, B E, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. Dr Nigel Marks. **Session:** Semester 1. **Classes:** 2hr lec. & 3hr prac/wk. **Assumed Knowledge:** Programming experience in MATLAB. **Prohibitions:** COSC3011, COSC 3001, COSC 3901, PHYS3301, PHYS3901. **Assessment:** Lab, written exam. This unit is the Advanced version of COSC3011. The subject matter is very similar, but more challenging problems will be covered. *Textbooks* Numerical Methods for Physics, 2nd Edition, by A.L. Garcia. **COSC 3012 Parallel Computing & Visualisation** 6 credit points. B A, B E, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. Dr Nigel Marks. **Session:** Semester 2. **Classes:** 2hr lec & 3hr prac/wk. **Assumed Knowledge:** Programming experience in C and MATLAB or equivalent. **Prerequisites:** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas. **Prohibitions:** COSC3912, COSC 3002, COSC 3902, COSC3601, PHYS3303, PHYS3933. **Assessment:** Lab, practical exam. The first half of the course considers Parallel Computing on distributed and shared memory architectures. Students learn the concepts of distributed-memory programming using the Message Passing Interface (MPI), while shared-memory programming is presented using OpenMP. Concepts covered include scalability, communication overheads, deadlocks, domain decomposition and incremental parallelism. Basic programming ability in Fortran or C (or equivalent) is assumed. The second half of this course considers Scientific Visualisation as a tool for analysing, interpreting and communicating multi-dimensional numerical data. Students learn the principles and practice of Scientific Visualisation in the context of OpenDX, the open-source Data Explorer package developed by IBM. No previous experience is required, and the object-oriented visual programming environment is taught in the laboratory sessions. **COSC 3912 Parallel Computing & Visualisation (Adv)** 6 credit points. B A, B E, B Sc, B Sc (Bioinformatics), UG Study Abroad Program. Dr Nigel Marks. **Session:** Semester 2. **Classes:** 2hr lec & 3hr prac/wk. **Assumed Knowledge:** Programming experience in C and MATLAB or equivalent. **Prerequisites:** 12 credit points chosen from Junior Mathematics and Statistics, 12 credit points of Intermediate units in Science subject areas with a credit average. **Prohibitions:** COSC3012, COSC 3002, COSC 3902, COSC3601, PHYS3303, PHYS3933. **Assessment:** Lab, practical exam. This unit is the advanced version of COSC3012. The subject matter is very similar, but more challenging problems will be covered.	**Page 142**
8.	**Undergraduate tables and units of study:** **MOBT 3101 Molecular Biotechnology 3A** 6 credit points. B Sc (Molecular Biotechnology). Dr. Neville Firth. **Session:** Semester 1. **Classes:** 3 lec, 1 tut/wk. **Prerequisite:** MOBT2102. **Assumed Knowledge:** MBLG2072 or MBLG2972. **Assessment:** One 2 hour theory exam (70%) and in-semester assessments (30%). *NB: Students must pass the theory exam to pass the unit overall.* *NB: This unit of study is only available to students in the BSc (Molecular Biotechnology).* This unit of study builds on MOBT 2102 and to expand concepts and applications of modern molecular biotechnology. It assumes students have previously been taught molecular biology and genetics through MBLG 2072/2972. It commences with the synthesis of commercial products by recombinant microorganisms, including small biological molecules, antibiotics, polymers, nucleic acids and proteins, then leads onto large-scale production of proteins from recombinant microorganisms. Students will be	**Page 181**

Item	Amendment	Handbook page number
8. *(contin.)*	introduced to scaled-up microbial growth and bioreactors, combined with typical large-scale fermentation systems and downstream processing. This will be broadened to an appreciation of yeast and mammalian cells in large-scale production. Examples of major protein-based therapeutics will be examined in detail. The unit introduces students to genome sequencing and technologies, and follows with the impact of proteomics in identifying new drug targets and therapeutics, its interplay with genomics, disease states, quantitative vs. qualitative profiles, and the role of bioinformatics in data and database management. The role of protein structure on function and the engineering of protein structures in briefly described. Agricultural and environmental biotechnology is introduced with a focus on promoting plant growth, the utilization of starch and cellulose, the application of enzymes in food processing, bioremediation strategies and green manufacturing technologies, and the impact heavy metals and pesticides on the environment. Issues facing start-up companies and the commercialization of discoveries complete the unit. *Textbooks* Molecular Biotechnology: Principles and Applications of Recombinant DNA", Bernard R. Glick and Jack J. Pasternak, 3rd Edition, 2003, ASM Press, Washington, ISBN 1-55581-224-4 (hardcover) or ISBN 1-55581-269-4 (paperback) **MOBT 3102 Molecular Biotechnology 3B** 6 credit points. B Sc (Molecular Biotechnology). Dr Kevin Downard. **Session:** Semester 2. **Classes:** 2 lec, 1 tut/wk & 75 hrs industry related project over semester. **Prerequisites:** MOBT2002 or MOBT3101. **Prohibitions:** MOBT3002. **Assessment:** Presentation, project report and theory exam. *NB: This unit of study is only available to students in the BSc (Molecular Biotechnology).*	**Page 181**
9.	**Postgraduate degree requirements:** **Molecular Biotechnology** **Graduate Certificate in Applied Science (Molecular Biotechnology)** **Graduate Diploma in Applied Science (Molecular Biotechnology)** **Master of Applied Science (Molecular Biotechnology)** *Optional Units:* Students may select optional units from any of the other Graduate Diploma or Masters courses offered by the Faculty, subject to timetable constraints. These optional units are listed in the surrounding pages of this handbook. The following list of relevant units may assist with your selection: BIOL5001 Molecular Biology and Inheritance ENVI5705 Ecology Principles for Environ Scientists MCAN5005 Microscopy and Optical Microscopes Please note, the unit MOBT5303 is not an allowable elective. *Units of study:* **MOBT5101 Applied Molecular Biotechnology A** 12 credit points. Dr Neville Firth. **Session:** Semester 1. **Classes:** 2 hrs lectures and 1 tutorial per week. Laboratory session(s). **Assessment:** In semester quizzes/reports and exam. This unit of study provides a solid foundation for education and training in applied molecular biotechnology. Students are given a molecular-level understanding of the building blocks/biopolymers of life followed by an emphasis upon molecular biology and genetics. Topics covered include: recombinant DNA technology, bioprocessing and proteomics.	**Page 270**

Item	Amendment	Handbook page number
9. *(contin.)*	**MOBT5102 Applied Molecular Biotechnology B** 12 credit points. Dr Rachel Codd. **Session:** Semester 2. **Classes:** 2 hrs lectures and 1 tutorial per week. Laboratory session(s). **Assessment:** In semester quizzes/reports and exam. Students are provided with knowledge of key scientific areas in which advances depend upon an understanding of molecular biotechnology. Applications of molecular biotechnology in environmental/analytical science (bioremediation, biomining, biosensors) and in biomedicine (structure-activity relationships, computational modeling, drug design) are detailed. **MOBT5203 Applied Molecular Biotech C (Theory)** 6 credit points. Dr Kevin Downard. **Session:** Semester 1. **Classes:** 2 hrs lectures and 1 tutorial per week. **Assessment:** Essay/exam and in semester quizzes/reports. *NB: This unit is available to Masters of Applied Science (Molecular Biotechnology) students only.* This unit of study familiarizes students with the business aspects of biotechnology including taking research from the laboratory to the market. It provides a thorough grounding in key techniques used in Molecular Biotechnology and details select frontiers in the field. These studies provide the foundation for MOBT5303 which is taken following this unit (or concurrently by mid-year entry students). **MOBT5303 Applied Molecular Biotech C (Project)** 6 credit points. Dr Kevin Downard. **Session:** Semester 1, Semester 2. **Prerequisites:** MOBT (5101 or 5102). **Corequisites:** MOBT5203. **Assessment:** Report and individual/group presentation. *NB: This unit is available to Masters of Applied Science (Molecular Biotechnology) students only.* This unit of study provides students with the opportunity to experience Molecular Biotechnology in operation by conducting a case study project with an industry affiliate or an on-site industry placement. It assumes students have previously studied or are concurrently studying MOBT5203. Entry to an on-site industry placement is limited by a quota and project/facility availability.	**Page 270**
10.	**Staff:** *Professor* Nicholas H Hunt, BSc PhD Aston. Appointed 1989 Nicholas JC King, MB ChB Cape T PhD ANU *Associate Professors* Brett D Hambly, BSc(Med) MBBS PhD Izuru Matsumoto, MD PhD *Senior Lecturers* Shishan Bao, MB BS Shanghai PhD Roger S Pamphlett, BSc(Med) MD ChB Cape T, FRACP MRCPath	**Page 313**
		Authorised by Shari Lee 09.03.2006