



The University of Sydney

Faculty of Science Handbook 2005

University dates

University semester and vacation dates 2005

Summer School

Lectures begin	Tuesday 4 January
Lectures end	Friday 4 March

Semester 1

Lectures begin	Monday 7 March
AVCC Common Week/non-teaching Easter Period	Friday 25 March to Friday 1 April
Study vacation	Monday 13 June to Friday 17 June
Examination period	Monday 20 June to Saturday 2 July
Semester ends	Saturday 2 July
AVCC Common week/non-teaching period	Monday 4 July to Friday 8 July

Semester 2

Lectures begin	Monday 25 July
AVCC Common Week/non-teaching period	Monday 26 September to Friday 30 September
Study vacation	Monday 31 October to Friday 4 November
Examination period	Monday 7 November to Saturday 19 November
Semester ends	Saturday 19 November

Last dates for withdrawal or discontinuation 2005

Semester 1 units of study.

Last day to add a unit	Friday 18 March
Last day for withdrawal	Thursday 31 March
Last day to discontinue without failure (DNF)	Friday 29 April

Last day to discontinue (Discontinued – Fail)	Friday 10 June

Semester 2 units of study.

Last day to add a unit	Friday 5 August
Last day for withdrawal	Wednesday 31 August
Last day to discontinue without failure (DNF)	Friday 9 September

Last day to discontinue (Discontinued – Fail)	Friday 28 October

Last day to withdraw from a non-standard unit of study.	Details in the session calendar on the Timetable Unit website. http://web.timetable.auth.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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Faculty of Science

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

The University of Sydney Faculty of Science Handbook 2005.
© 2004 The University of Sydney. ISSN 1034-2699.
CRICOS Provider Code 00026A.

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.

Produced by the Publications Office, The University of Sydney.

Contents

Introduction	1		
University Dates	1	Bachelor of Medical Science	235
Introduction	1	Bachelor of Psychology	236
Message from the Dean	1	Bachelor of Liberal Studies	238
1. Contact information	3	Bachelor of Science in Media and Communications	241
Bachelor degree program coordinators	3	Generic glossary for the BSc, BCST, BIT, BMedSc, BPsych, BLibStud	241
Schools, departments, centres	3	6. Postgraduate degree requirements	242
2. Undergraduate enrolment advice and policies	10	Research degrees	242
Enrolment day FAQs	10	Coursework degrees in Science	248
Bachelor of Science (BSc)	11	Coursework degrees in Applied Science	269
Enrolment guide by major	12	7. Postgraduate degree regulations	286
Bachelor of Science (Advanced)	15	University of Sydney (Coursework) Rule 2000 (as amended)	286
Bachelor of Science (Advanced Mathematics)	16	Degrees of Doctor	286
Bachelor of Science (Bioinformatics)	17	Degrees of Master	289
Bachelor of Science (Environmental)	18	Graduate diplomas	294
Bachelor of Science (Marine Science)	19	Graduate certificates	296
Bachelor of Science (Molecular Biology and Genetics)	20	Applied Science	297
Bachelor of Science (Molecular Biotechnology)	21	8. Staff	301
Bachelor of Science (Nutrition)	22	Faculty of Science	301
Combined BAppSc (Exercise and Sport Science)/ BSc (Nutrition) degrees	23	Faculty and Student Information Office	301
Combined Science/Law degrees (BSc/LLB)	24	Marketing and Communication unit	301
Combined Science/Arts & Arts/Science degrees	26	Agricultural Chemistry and Soil Science	301
Combined Engineering/Science degrees	27	Anatomy and Histology	302
Double degree in Science/Engineering	28	Biological Sciences	302
Combined Science/Commerce degrees	29	Chemistry	303
Combined Nursing/Science degrees	30	Geosciences	305
Combined Education/Science degrees	31	Immunology	305
Bachelor of Liberal Studies (BLibStud)	32	Infectious Diseases	305
Bachelor of Computer Science and Technology (BCST)	34	Information Technologies	306
Bachelor of Computer Science and Technology (Advanced)	36	Mathematics and Statistics	307
Bachelor of Information Technology (BIT)	36	Molecular and Microbial Biosciences	308
Bachelor of Medical Science (BMedSc)	37	Pathology	310
Combined Engineering/Medical Science degrees	39	Pharmacology	310
Combined Science/Medicine degrees	39	Physics	311
Bachelor of Science in Media and Communications (BScMediaCommun)	40	Physiology	313
Bachelor of Psychology (BPsych)	40	Psychology	313
Honours in the Faculty of Science	41	Other units	315
Important policies relating to undergraduate candidature	43	9. Scholarships	317
Discontinuation and re-enrolment - University of Sydney (Coursework) Rule	44	Undergraduate Prizes and Scholarships	317
Restrictions upon re-enrolment - University of Sydney (Coursework) Rule	44	Postgraduate Prizes and Scholarships	327
Faculty life and representation	45	Science subject area index	330
Employment for graduates in Science	46	University of Sydney (Coursework) Rule 2000 (as amended)	334
3. Undergraduate tables and units of study	47	PRELIMINARY	334
Table I: Bachelor of Science	47	RULES RELATING TO THE COURSEWORK AND AWARD COURSES	334
Table IA: Bachelor of Science (Bioinformatics)	110	Division 1: Award Course requirements credit points and assessment	334
Table IB: Bachelor of Science (Environmental)	111	Division 2: Enrolment	335
Table IC: Bachelor of Science (Marine Science)	112	Division 3: Credit, cross-institutional study and their upper limits	335
Table ID: Bachelor of Science (Molecular Biology and Genetics)	114	Division 4: Progression	335
Table IE: Bachelor of Science (Molecular Biotechnology)	117	Division 5: Discontinuation of enrolment and suspension of candidature	336
Table IF: Bachelor of Science (Nutrition)	118	Division 6: Unsatisfactory progress and exclusion	336
Table II: Law units of study	121	Division 7: Exceptional circumstances	337
Table III: Bachelor of Information Technology	122	Division 8: Award of degrees, diplomas and certificates	337
Table IIIA: Bachelor of Information Technology Majors	135	Division 9: Transitional provisions	337
Table IV: Bachelor of Medical Science	144	General University information	338
Units of study descriptions	146	Accommodation Service	338
4. Talented Student Program	222	Admissions Office	338
5. Undergraduate degree regulations	225	Applying for a course	338
University of Sydney (Coursework) Rule 2000	225	Assessment	338
Bachelor of Science	225	Careers Centre	338
Bachelor of Computer Science and Technology	231	Casual Employment Service	338
Bachelor of Information Technology	233		

Centre for Continuing Education	338
Centre for English Teaching	339
Child Care	339
The Co-op Bookshop	339
Counselling Service	339
Disability Services	339
Enrolment and pre-enrolment	339
Environmental Policy	339
Examinations	339
Fees	339
Financial Assistance Office	340
Freedom of information	340
Graduations Office	340
(Grievances) appeals	340
HECS and Fees Office	340
Information Technology Services (ITS)	340
International Student Centre	341
Koori Centre and Yooroang Garang	341
Language Centre	341
Learning Centre	341
Library	341
Mathematics Learning Centre	342
MyUni student portal	342
Part-time, full-time	342
Privacy	342
Scholarships for undergraduates	342
Student Centre	342
Student identity cards	343
Student services	343
The Sydney Summer School	343
Timetabling unit	343
University Health Service	343
Student Organisations	344
Students' Representative Council	344
Sydney University Postgraduate Representative Association (SUPRA)	344
Sydney University Sport	344
University of Sydney Union	344
Abbreviations	345
Glossary	349
Maps	362
Camperdown/Darlington campus map	362

Faculty of Science Handbook

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

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.

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.

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.

1. Contact information

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

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

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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

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Undergraduate:	Dr Robert Caldwell
Honours:	Prof Ivan Kennedy
Graduate:	Dr Robert Caldwell
<i>Soil Science</i>	
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Honours:	Prof Alex McBratney
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1. Contact information

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Graduate:	Dr Frank Lovicu
<i>Histology</i>	
All years:	Prof Christopher R Murphy, A/Prof Maria Byrne

Biochemistry

see Molecular and Microbial Biosciences

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Cell Pathology

see Pathology

School of Biological Sciences

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Intermediate year:	A/Prof Ben Oldroyd
Senior year:	A/Prof Ben Oldroyd
Honours year:	Dr Adele Pile
Graduate adviser:	Prof Chris Dickman

Central Clinical School

Immunology Discipline

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Head of Discipline: Professor Warwick Britton

Academic adviser	
All years:	A/Prof Helen Briscoe

Infectious Diseases Discipline

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Head of Discipline: Associate Professor Colin Harbour

Academic adviser	
All years:	A/Prof Colin Harbour

School of Chemistry

School of Chemistry, F11
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Intermediate year:	Dr Ron Clarke
Senior year:	Dr Rob Baker
Honours year:	Dr Cameron Kepert
Graduate adviser:	Dr George Bacskey

Computational Science

see Physics

Computer Science

see Information Technologies

Centre for Research on Ecological Impacts of Coastal Cities

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 Director: Professor Antony J Underwood

Academic adviser	
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Environmental Science

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 Director: Dr Phil McManus

Academic advisers	
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Graduate:	Dr Craig Barnes

Fruit Fly Research Centre

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School of Geosciences

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 Head of School: Professor John Connell

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Intermediate year:	A/Prof Phil Hirsch
Senior year:	Dr Stephen Gale
Honours year:	Dr Phil McManus
Graduate adviser:	A/Prof Deirdre Dragovich
<i>Geology and Geophysics</i>	
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Intermediate year:	Dr Patrice Rey
Intermediate year Environmental Geology:	Dr Gavin Birch
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Honours year:	Dr Derek Wyman
Graduate adviser:	Dr Derek Wyman

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 Director: Dr Rachel Ankeny

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Honours:	Dr Michael Selgelid
Graduate:	Dr Hans Pols

Immunology

see Central Clinical School

Infectious Diseases

see Central Clinical School

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Senior Year:	Dr Josiah Poon
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Graduate (research):	Dr Sanjay Chawla

University of Sydney Institute of Marine Science

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

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 Head of School: Associate Professor Don Taylor

Academic advisers	
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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
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Microbiology

See Molecular and Microbial Biosciences

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Academic adviser	
Graduate:	Dr Vicki Keast

School of Molecular and Microbial Biosciences

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Microbiology Discipline

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Head of Discipline: Associate Professor Samir Samman

Molecular Biotechnology

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Graduate adviser:	A/Prof Alan Jones
Biochemistry	
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Junior and Intermediate year Molecular Biology & Genetics:	Dr Dale Hancock
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:	A/Prof Samir Samman

1. Contact information

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Honours year:	Dr Tom Ferenci
Medical Science:	Mrs Helen Agus
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Senior year:	Dr Neville Firth
Graduate adviser:	Dr Kevin Downard

Nutrition

See School of Molecular & Microbial Sciences

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Graduate:	Dr John Gibbins

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Senior year:	A/Prof Ian Spence Professor Graham Johnston
Honours year:	Dr Jasmine Henderson
Graduate adviser:	Dr Robert Vandenberg

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Intermediate year:	Dr Gordon Robertson
Senior year:	A/Prof Tim Bedding
Honours year:	A/Prof Anne Green
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Medical Science:	Mrs Françoise Janod-Groves
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Honours year:	Prof David Allen
Graduate adviser:	Prof Max Bennett

Key Centre for Polymer Colloids

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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 web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

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.

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 of the Science Handbook 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 (and Advanced), Bachelor of Computer Science and Technology (and Advanced), Bachelor of Information Technology and the Bachelor of Liberal Studies (Advanced and International).

How many credit points should I take per semester?

You should take 24 credit points each semester if you are a full time student. If you take less 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. 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.

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

But - 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.

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)

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 32 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.

Sample Bachelor of Science

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
Year 1	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 2 or elective	Major 2 or elective	Major 2 or elective			
		12	4	4	4			24
	2	Major 1 3XXX	Major 2 or elective	Major 2 or elective	Major 2 or elective			
		12	4	4	4			24
							Total credit points:	144
Require: 144cp total, min. 96cp Science, min 36cp Junior Science incl. 12cp Maths, max. 60cp Junior, one 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 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.

Pass (Concessional)

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

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.

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. You should not be deceived about the level of difficulty of the BSc degree course.

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 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.

12 credit points of Junior units of study in each of Biology + Chemistry + Mathematics + 12 credit points from units of study selected in consultation with an adviser.

Biology

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

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 take at least 16 credit points of Intermediate Chemistry. 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. 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

A chemistry bridging course is recommended for students who have not studied chemistry for the HSC and wish to take Chemistry 1A and 1B or higher.

Advanced Chemistry and Special Studies

If you have a UAI of at least 93 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 result in the 94th percentile or better.

Computational Science**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.

Geography

Major not 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

Major offered at the Advanced level.

12 credit points of Junior units of study in each of Geology + Chemistry or Physics + Mathematics + two units of study selected in consultation with an adviser.

Geophysics

Major offered at the Advanced level.

12 credit points of Junior units of study in each of Geology + Physics + Mathematics + two units of study selected in consultation with an adviser.

History and Philosophy of Science**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 8 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

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 Senior Immunology, IMMU 3002 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

Major not offered at the Advanced level.

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**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 16 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, 1012, 1013 and 1015 (all Life Sciences). 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 result in Band E4 of HSC Mathematics Extension 1 you may be eligible to choose MATH 1901, 1902 and 1904. Please consult with the School's Director of First Year Studies.

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 be invited into: 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.

12 credit points in each of Junior Biology, Chemistry and Mathematics + 12 credit points from other areas.

Nanoscience and Technology

Major offered at the Advanced level.

12 credit points in each of Chemistry, Mathematics and Physics + AMME 2302 + 8 credit points chosen 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

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 + Chemistry + Mathematics (MATH 1001/1901 + MATH 1002/1902 + MATH 1003/1903 + MATH 1005/1905) + 12 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 first semester option may move into either PHYS 1003 (Technological) or PHYS 1004 (Environmental & Life Science).

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 (from 2006).

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.

Note: If planning to complete a second Science major with Psychology (double major) students are advised to complete 8 credit points of Senior Psychology in the second semester of year 2 (see Psychology Web page).

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

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 1005/1903/1907 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)

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.

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
Year 1	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	Major 2 Intermediate 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 2 or elective 3XXX	Major 2 or elective 3XXX	Major 2 or elective 3XXX			
		12	4	4	4			24
	2	Major 1 39XX	Major 2 or elective 3XXX	Major 2 or elective 3XXX	Major 2 or elective 3XXX			
		12	4	4	4			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.								

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.
- Advanced students usually take 24 credit points of the above at the Advanced level.
- no more than 48 credit points from Junior units of study;

2. Undergraduate enrolment advice and policies

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.

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.

Pass (Concessional)

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

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)

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.

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
Year 1	1	MATH 19XX	MATH 19XX	Science elective 1XXX	Science elective 1XXX	Elective		
		3	3	6	6	6		24
	2	MATH 19XX	MATH 19XX	Science elective 1XXX	Science elective 1XXX	Elective		
		3	3	6	6	6		24
Year 2	1	MATH 29XX	MATH 29XX	Major 2 Intermedi- ate or Science elective 2XXX	Intermediate or Senior Science elective			
		6	6	6	6			24
	2	MATH 29XX	MATH 29XX	Major 2 Intermedi- ate or Science elective 2XXX	Intermediate or Senior elective			
		6	6	6	6			24
Year 3	1	MATH 39XX	MATH 39XX	MATH 39XX	Major 2 or elective 3XXX	Major 2 or elective 3XXX	Major 2 or elective 3XXX	
		4	4	4	4	4	4	24
	2	MATH 39XX	MATH 39XX	MATH 39XX	Major 2 or elective 3XXX	Major 2 or elective 3XXX	Major 2 or elective 3XXX	
		4	4	4	4	4	4	24
							Total credit points:	144
Require: 144cp total, min. 96cp science, max. 48cp Junior incl. 12cp Maths, min. 48cp Senior, min. 12cp Intermediate Advanced and/or TSP Maths and/or Stats, min. 24cp Senior Advanced and/or TSP Maths and/or Stats.								

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.

Pass (Concessional)

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

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.

Bachelor of Science (Bioinformatics)

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).

	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 elect- ive	MATH/SOFT elective			
		6	6	6	6			24
	2	SOFT 2X30	MBLG 2XXX	Life Science elect- ive	MATH/SOFT elective			
		6	6	6	6			24

2. Undergraduate enrolment advice and policies

Year 3	1	SOFT 3XXX	Life Science elect- ive	SOFT/ MATH/ PHYS elective	SOFT/ MATH/ PHYS elective			
		4	12	4	4			24
	2	BINF 3001	Life Science elect- ive	SOFT/ MATH/ PHYS elective				
		8	12	4				24
							Total credit points:	144
Require: 144cp total, and units of study as per Table 1A.								

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.

Pass (Concessional)

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

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.

Bachelor of Science (Environmental)

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 3001 and ENVI 3002.

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 Web site (<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.

Pass (Concessional)

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

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.

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
Year 1	1	MATH 1XXX	MATH 1XXX	ENVI 1002 1001	BIOL 1XXX 1XXX	CHEM 1XXX		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	GEOL 1002	BIOL 1XXX	CHEM 1XXX		
		3	3	6	6	6		24
Year 2	1	ENVI 2111	SOIL/GEOG elective	Table IB elective	Table IB Elective			
		6	6	6	6			24
	2	ENVI 2112	CHEM/GEOG elective	Table IB elective	Table IB Elective			
		6	6	6	6			24
Year 3	1	ENVI 3001	Table IB elective					
		12	12					24
	2	ENVI 3002	Table IB elective					
		12	12					24
							Total credit points:	144
Require: 144cp total, and units of study as per Table IB.								

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.

- CHEM 1001 or 1101 or 1901.
- Some study at the Advanced level is recommended but not compulsory.

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).

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.

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 (Marine Science)

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

Major in Tropical Marine Science

You should also note that a major strand of study is available in Tropical Marine Science within this degree program. A major strand of study in Tropical Marine Science must include:

- 36 credit points from Senior units of study in Marine Science and/or Tropical Marine Network Program (NTMP) including at least 18 credit points from NTMP units of study;
- no more than 18 credit points may be from NTMP units of study;

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 Sydney Institute for Marine Science (USIMS) for further information.

2. Undergraduate enrolment advice and policies

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
Year 1	1	MATH 1XXX	MATH 1XXX	PHYS 1XXX	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 2005	MARS 2007	BIOL 2XXX	Science elective			
		6	6	6	6			24
	2	MARS 2006	Science elective	BIOL 2XXX	Science elective			
		6	6	6	6			24
Year 3	1	MARS 3XXX	MARS 3XXX	MARS 3XXX	Table IC elective			
		6	6	6	6			24
	2	MARS 3XXX	MARS 3XXX	MARS 3XXX	Table IC elective			
		6	6	6	6			24
							Total credit points:	144
Require: 144cp total, and units of study as per Table IC.								

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 Web site (<http://www.usyd.edu.au/marine>) for further information.

Pass (Concessional)

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

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.

Bachelor of Science (Molecular Biology and Genetics)

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 requiring HSC Mathematics Extension 1 or 2 and include some statistics);
- BIOL (1001 or 1101 or 1901) and (1904 or 1905);
- 12 credit points of Junior units of study in the Science subject area of Chemistry (CHEM 1907 and 1909 is the preferred option);
- MBLG1001; 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.

Pass (Concessional)

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

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
Year 1	1	MATH 1XXX	MATH 1XXX	BIOL 1X01	CHEM 1907	Science elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	BIOL 190X	CHEM 1909	MBLG 1001		
		3	3	6	6	6		24
Year 2	1	MBLG 2X71	BCHM 2X71	MICR 2X21	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 3X01	BIOL 3X18	BIOL 3X27				
		12	6	6				24
	2	Table ID elective	Table ID elective					
		12	12					24
							Total credit points:	144
Require: 144cp total, and units of study as per Table ID. Note: from 2006, MBLG2071/2971 will replace MBLG2771/2871.								

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.

Bachelor of Science (Molecular Biotechnology)

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

Summary of requirements

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;
- 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.

Pass (Concessional)

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

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.

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	BCHM 2X71	MBLG 2X71	CHEM 2XXX	Elective			
		6	6	6	6			24
	2	MOBT 2102	MBLG 2X72	CHEM 2XXX	Elective			
		6	6	6	6			24
Year 3	1	BCHM 3098	BIOL 3X27	Table IE elective 3XXX	Table IE elective 3XXX			
		6	6	6	6			24
	2	MOBT 3102	CHEM 32X5	CHEM 3XXX	Table IE elective 3XXX			
		6	3	3	12			24
							Total credit points:	144
Require: 144cp total, and units of study as per Table IE.								

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 (Nutrition)

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.

Pass (Concessional)

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

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.

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
Year 1	1	MATH 1XXX	MATH 1XXX	BIOL 1001/1901	CHEM 1908/1101/ 1901/1903	SOFT/INFO/ PHYS/ PSYC elective		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	BIOL 1XXX	CHEM 1909/1102/ 1902/1904	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 3901	AGCH 3025/ Table IF elective 3XXX					
		12	6					18
	2	NUTR 3902	AGCH 3026/ Table IF elective 3XXX	BCHM 3X02				
		12	6	12				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.

Universities Admissions Index (UAI)

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

Degree resolutions

See chapter 5.

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

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

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 at 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.

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
Year 1	1	CHEM 1101/1908	BACH 1149	BIOS 1136	BIOS 1137	EXSS 1018		
		6	4	4	3	6		23
	2	CHEM 1102/1909	BIOS 1133	BIOS 1139	EXSS 1019	EXSS 1030	MBLG 1001	
		6	3	3	4	3	6	25
Year 2	1	MBLG 2771**	NUTR 2911	BIOS 2098	EXSS 2019	MATH 1015		
		6	6	3	6	3		24
	2	BCHM 2072	NUTR 2912	BACH 2139*	EXSS 2022			
		6	6	6	6			24
Year 3	1	MATH 1011	EXSS 2016	EXSS 2018	EXSS 3021	EXSS 3023		
		3	3	6	6	6		24
	2	STAT 2012	EXSS 2020	EXSS 2023	EXSS 3027			
		6	6	6	6			24
Year 4	1	NUTR 3901	EXSS 3024	EXSS 4007				
		12	6	6				24
	2	NUTR 3902	BCHM 3002					
		12	12					24
BAppSc (Exercise, Sports Science and Nutrition) <i>Note: * Replaces BACH 2132 (4cp) from 2005. </i>								

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.								

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

Combined Science/Law degrees (BSc/LLB)

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 2004 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
Year 1	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 Intermedi- ate 2XXX	Intermediate Sci- ence elective 2XXX	LAWS 1002	Science elective			
		6	6	8	4			24
	2	Major Intermedi- ate 2XXX	Intermediate Sci- ence elective 2XXX	LAWS 1003	Science elective			
		6	6	8	4			24
Year 3	1	Major 3XXX	LAWS 3000	Science elective				
		12	10	4				26
	2	Major 3XXX	LAWS 3002					
		12	10					22
							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.

Pass (Concessional)

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

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

2. Undergraduate enrolment advice and policies

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 1st 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 & Arts/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 Arts and Bachelor of Science, Bachelor of Science (Advanced) or Bachelor of Science (Advanced Mathematics) within either a BA/BSc or BSc/BA course.

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 Part A of the table of undergraduate units of study in the Faculty of Arts.

To qualify for the award of the pass degrees in the BA/BSc 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.

To qualify for the award of the pass degrees in the BSc/BA course a student normally shall satisfy the requirements for the BSc in the first six semesters of enrolment.

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
Year 1	1	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	1	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	1	Science major 3XXX	Elective	Arts elective 1XXX				
		12	6	6				24
	2	Science major 3XXX	Elective	Arts elective 1XXX				
		12	6	6				24
Year 4	1	Elective	Arts Senior elect- ive	Arts Senior elect- ive major				
		8	8	8				24
	2	Int/ Senior elective	Arts Senior elect- ive	Arts Senior elect- ive major				
		8	8	8				24

Year 5	1	Arts Senior elect- ive	Arts Senior elect- ive	Arts Senior elect- ive major				
		8	8	8				24
	2	Elective	Arts Senior elect- ive	Arts Senior elect- ive major				
		8	8	8				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.								

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 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 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.

Pass (Concessional)

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

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.

Combined Engineering/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 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.

Pass (Concessional)

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

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

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.**

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:

- 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.
- no more than 100 credit points from Junior units of study;
- at least 96 credit points of units of study taught by the Faculty of Economics and Business;
- no more than 48 credit points of Junior units of study taught by the Faculty of Economics and Business; and
- 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 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.

Pass (Concessional)

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

2. Undergraduate enrolment advice and policies

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
Year 1	1	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	Commerce Jun- ior core 1XXX		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	Science elective A 1XXX	Science elective B 1XXX	Commerce Jun- ior core 1XXX		
		3	3	6	6	6		24
Year 2	1	Science major Intermediate 2XXX	Intermediate Sci- ence elective 2XXX	Intermediate Sci- ence elective 2XXX	Commerce Jun- ior core 1XXX			
		6	6	6	6			24
	2	Science major Intermediate 2XXX	Intermediate Sci- ence elective 2XXX	Intermediate Sci- ence elective 2XXX	Commerce Jun- ior core 1XXX			
		6	6	6	6			24
Year 3	1	Science major 3XXX	Commerce/ Sci- ence elective	Commerce Jun- ior core 1XXX				
		12	6	6				24
	2	Science major 3XXX	Commerce/ Sci- ence elective	Commerce Jun- ior core 1XXX				
		12	6	6				24
Year 4	1	Elective	Commerce Senior elective	Commerce Senior elective major				
		8	8	8				24
	2	Elective	Commerce Senior elective	Commerce Senior elective major				
		8	8	8				24
Year 5	1	Int/Senior elect- ive	Commerce Senior elective	Commerce Senior elective major				
		8	8	8				24
	2	Int/Senior elect- ive	Commerce Senior elective	Commerce Senior elective major				
		8	8	8				24
							Total credit points:	240
Require: 240cp total, max. 100cp 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).								

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.

Combined Nursing/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 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;
- 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.

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.

Pass (Concessional)

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

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)

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;
- at least 32 credit points of units of study in Methods and Practice of Teaching; and
- 32 credit points in Teaching and Learning including successful completion of the practicum.

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;

2. Undergraduate enrolment advice and policies

- 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;
- at least 32 credit points of units of study in Methods and Practice of Teaching; and
- 32 credit points in Teaching and Learning including successful completion of the practicum.

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)

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:

Years I to III

- 48 credit points from prescribed Education units of study;
- in Year I, 36 credit points from Junior units of study in Science subject areas of which 12 must be in Mathematics and Statistics, 12 in Psychology and 12 in either Chemistry or Physics;
- in Year II, 24 credit points from Intermediate units of study in Psychology and 12 credit points from Intermediate units of study in Mathematics, Statistics, Chemistry or Physics;
- in Year III, 24 credit points from Senior units of study in Psychology;

Years IV & V

- 16 credit points from prescribed Education units of study;
- 16 credit points from prescribed units of study in School Counselling;
- 16 credit points from Senior units of study in either Mathematics and Statistics, Chemistry or Physics; and
- complete fourth year Honours or equivalent in Psychology (48 credit points).

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.

Pass (Concessional)

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

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)

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)

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.

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
Year 1	1	Science Junior elective A	Arts/Science Juni- or 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 Juni- or elective B	Language Junior elective	Maths or ENGL 1000/1005 or LNGS 1005			
		6	6	6	6			24
Year 2	1	Science major Inter- mediate elective	Arts/Science Juni- or elective	Language Interme- diate elective	Intermediate/Seni- or elective			
		6	6	8	4			24
	2	Science major Inter- mediate elective	Arts/Science Juni- or elective	Language Interme- diate elective				
		6	6	8				20
Year 3	1	Science major Senior elective	Arts major Senior elective	Junior elective				
		12	8	6				26
	2	Science major Senior elective	Arts major Senior elective	Junior elective				
		12	8	6				26
Year 4	1	Arts/Science Inter- mediate/Senior elective	Arts major Senior elective	Intermediate/Seni- or elective				
		8	8	8				24
	2	Arts/Science Inter- mediate/Senior elective	Arts major Senior elective	Intermediate/Seni- or elective				
		8	8	8				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.								

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.

Pass (Concessional)

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

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.

Bachelor of Computer Science and Technology (BCST)

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>).

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 III(ii) elective	MATH elective	Table III (ii/iii) IT-related elective			
		6	6	6	6			24
	2	SOFT 2X30	Table III(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	Elective		
		6	6	4	4	4		24
	2	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(v) Project			
		6	6	4	8			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 III(iv), min. 6cp Table III(v), min 36cp from units other than COMP, INFO, ISYS, MULT, NETS, SOFT.								

Enrolment guide

There will be major changes to the curriculum in 2005. These will result in a large number of changes to the units listed in Table III. 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.usyd.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 32 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.

Pass (Concessional)

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

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.

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 will be major changes to the curriculum in 2005. These will result in a large number of changes to the units listed in Table III. 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)

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 will be major changes to the curriculum in 2005. These will result in a large number of changes to the units listed in Table III. 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.usyd.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 32 credit points in any one semester without permission
- in order to enrol in a unit of study, you have to meet any pre-requisites 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.

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
Year 1	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 III(ii) elect- ive	Table III (iii/iv) IT-related elective	MATH elective			
		6	6	6	6			24
	2	SOFT 2X30	Table III(ii) elect- ive	Table III (iii/iv) IT-related elective	Elective			
		6	6	4	8			24
Year 3	1	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Elective		
		4	4	6	6	4		24
	2	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Elective		
		4	4	6	6	4		24
Year 4	1	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Table III(iv/v) elective	Elective		
		4	4	6	6	4		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.								

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 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.

Bachelor of Medical Science (BMedSc)

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;

2. Undergraduate enrolment advice and policies

- 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 32 credit points in any one semester without permission
- in order to enrol in a unit of study, you have to meet any pre-requisites 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.

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
Year 1	1	MATH 1XXX	MATH 1XXX	CHEM 1XXX	PHYS 1XXX	BIOL 1XXX		
		3	3	6	6	6		24
	2	MATH 1XXX	MATH 1XXX	CHEM 1XXX	PHYS 1XXX	MBLG 1001		
		3	3	6	6	6		24
Year 2	1	BMED 2801	BMED 2802	BMED 2803	BMED 2804			
		6	6	6	6			24
	2	BMED 2805	BMED 2806	BMED 2807	BMED 2808			
		6	6	6	6			24
Year 3	1	Senior core 3XXX	Senior core 3XXX					
		12	12					24
	2	Senior core 3XXX	Senior core or elective(s)					
		12	12					24
							Total credit points:	144
Require: 144cp total, min 48cp Junior, min 48cp Intermediate core, min 36cp Senior core, no more than 12cp from units of study outside Table V.								

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.

Combined Engineering/Medical Science degrees

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)
- 40 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

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 YAM 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 YAM 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)

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.

Units of study

The units of study available for this degree are set out in Table V: Bachelor of Science in Media and Communications 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)

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
- at least 24 credit points of Intermediate Psychology units of study at an average grade of Distinction or better
- at least 30 credit points of Senior Psychology units of study (including PSYC3201 and PSYC3202) at an average grade of Distinction or better
- 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 32 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
- 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.

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.

Pass (Concessional)

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

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
Year 1	1	PSYC 1001	MATH 1XXX	MATH 1XXX	Science elective 1XXX	Elective		
		6	3	3	6	6		24
	2	PSYC 1002	MATH 1XXX	MATH 1XXX	Science elective 1XXX	Elective		
		6	3	3	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 3202	PSYC 3XXX	PSYC 3XXX	PSYC 3XXX	PSYC 3XXX or elective	PSYC 3XXX or elective	
		4	4	4	4	4	4	24
	2	PSYC 3201	PSYC 3XXX	PSYC 3XXX	PSYC 3XXX or elective	PSYC 3XXX or elective	PSYC 3XXX or elective	
		4	4	4	4	4	4	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. 12cp Junior Psychology, min. 24cp Intermediate Psychology, min. 30cp Senior Psychology (incl. PSYC3201 and PSYC 3202), min. 48cp Honours Psychology, min. 96cp Science, min. 12cp Maths, max. 60cp Junior.								

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 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 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.

Honours in the Faculty of Science

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

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 58 (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 BScMediaComm 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 sat-

isfied 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:

where W_c 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 M_c is the mark out of 100 for the unit of study.

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

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 enrolls 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	46–49
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 BScMediaComm 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.

H1	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.*

Special consideration

The Faculty of Science recognises that the performance of students may be adversely affected by illness or other misadventure, and makes provision for special consideration of such disabilities when examination results are considered. Faculty intends only to compensate for sub-standard performance in assessments, which do not reflect a student's true competence in a subject, and such provisions must not act to the disadvantage of other students. Combined Law students should familiarise themselves with the Faculty of Law's provisions as they affect Law subjects.

Any student who believes that his/her performance has been or may be adversely affected by an occurrence of illness or misadventure may request Faculty to give special consideration to the circumstances. Such a request must be made within one week of the occurrence and must be accompanied by an appropriate medical certificate or other relevant documentary evidence.

Such certificates should state not only the nature of the illness or misadventure but also (where relevant) the opinion of the issuer as to the extent of disability involved.

Where several requests for special consideration have been received from one student, the Faculty may wish to obtain from the medical practitioner or other issuer of corroborating certificates more detail as to the precise extent of the disability. In cases where the Faculty believes that other students may be adversely affected by the giving of special consideration, it may require the applicant to obtain a professional opinion from another source.

Any student who is subject to a chronic or recurrent disability or who has been in need of, or undertaken counseling assistance should discuss the matter with a Departmental or Faculty adviser, as appropriate.

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) 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.

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.

(3) 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 readmission to the award course or re-enrolment in the unit or units of study concerned after at least 4 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 Readmissions).

(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 readmission to an award course or re-enrolment in a unit of study after a period of exclusion, and who is refused readmission or re-enrolment may also apply to the Appeals Committee.

(b) The Appeals Committee shall comprise:

(i) 3 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) 2 student Fellows; and

(iv) up to 4 other Fellows.

(c) The Appeals Committee may meet as one or more sub-committees providing that each sub-committee shall include at least 1 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 sub-committee.

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

(f) The Appeals Committee or a sub-committee 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 sub-committee considering the appeal. A student so appearing may be accompanied by a friend or adviser.

(h) The Appeals Committee or sub-committee 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 sub-committee hears the student.

(i) If, due notice having been given, a student fails to attend a meeting of the Appeals Committee or sub-committee scheduled to consider

that student's appeal, the Appeals Committee or sub-committee, 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.

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 inter-faculty 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, Bio-

2. Undergraduate enrolment advice and policies

chemical 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 student's 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 web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

Table I: Bachelor of Science

Unit of Study		CP	A: Assumed knowledge P: Pre-requisites 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)	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 the following:				
(i) PHSI (3001 or 3901 or 3002 or 3902);				
(ii) Senior ANAT units of study.				
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 NB: The completion of 6 credit points of MBLG units of study is highly recommended.	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. N ANAT2002 NB: The completion of 6 credit points of MBLG units of study is highly recommended.	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 NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 2
Senior ANAT units of study				

3. Undergraduate tables and units of study

ANAT 3001	Microscopy and Histochemistry	12	P ANAT 2001. For BMedSc students: 32 credit points of Intermediate BMED units including BMED (2503, 2504, and 2505). NB: From 2006 the prerequisites will be: ANAT2008 For BMedSc students, 42 credit points of Intermediate BMED units including BMED (2803, 2804, 2805).	Semester 1
ANAT 3002	Cells and Development	12	A (i) an understanding of the basic structure of vertebrates; (ii) an understanding of basic biochemistry and genetics P ANAT2001. For BMedSc students, 32 credit points of Intermediate BMED units including BMED (2502, 2503, 2504, and 2505). N ANAT 3003 NB: From 2006 the prerequisites will be: ANAT2008 or ANAT2011 and MBLG (2771 or 2871). For BMedSc students, 42 credit points of intermediate BMED units including BMED (2802, 2803, 2804, 2806).	Semester 2
ANAT 3003	Transmission & Scanning Electron Microsc	12	P ANAT2001. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2503, 2504 & 2505). N ANAT 3002 NB: The completion of 6 credit points of MBLG units of study is highly recommended. From 2006 the prerequisites will be: For BMedSc students 42 credit points of Intermediate BMED units including BMED (2803, 2804 & 2805).	Semester 2
ANAT 3004	Cranial and Cervical Anatomy	6	P ANAT2002 N ANAT3005 NB: Not more than 12 credit points allowed from ANAT3004, ANAT3007 & ANAT3008. The completion of 6 credit points of MBLG is highly recommended. From 2006 the prerequisite will be: ANAT2009	Semester 2
ANAT 3006	Forensic Osteology	6	A Understanding of basic human musculoskeletal anatomy. P Credit in ANAT2002 NB: The completion of 6 credit points of MBLG is highly recommended. From 2006 the prerequisite will be: at least Credit level in ANAT2009.	Semester 1
ANAT 3007	Visceral Anatomy	6	A Some knowledge of basic mammalian biology. P ANAT (2002 or 2003) or 32 credit points of Intermediate BMED units including BMED (2503, 2504 and 2505). NB: Not more than 12 credit points allowed from ANAT3004, ANAT3007 & ANAT3008. From 2006 the prerequisites will be: ANAT2009 or ANAT2010 or any 42 credit points of Intermediate BMED units including BMED (2803, 2804 and 2805).	Semester 1
ANAT 3008	Musculoskeletal Anatomy	6	A Some knowledge of basic mammalian biology P ANAT2002 N ANAT3005. NB: Not more than 12 credit points allowed from ANAT3004, ANAT3007 and ANAT3008. From 2006 the prerequisites will be: ANAT2009.	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 2002	Molecules, Metabolism and Cells	8	P MBLG (2001 or 2901) N May not be counted with AGCH 2001 or BCHM (2102 or 2902).	Summer
BCHM 2102	Molecules, Metabolism and Cells Theory	4	P MBLG (2001 or 2101 or 2901) N May not be counted with AGCH 2001 or BCHM (2002 or 2902).	Summer

3. Undergraduate tables and units of study

BCHM 2071	Protein Biochemistry	6	A CHEM (1101 and 1102) P 12 credit points of Junior Chemistry C Recommended concurrent units of study: MBLG (2771 or 2871) for progression to Senior Biochemistry, and/or Intermediate Chemistry. N BCHM2011 or BCHM2971 NB: The completion of 6 credit points of MBLG units of study is highly recommended. From 2006, MBLG1001 will be an additional prerequisite.	Semester 1
BCHM 2971	Protein Biochemistry (Advanced)	6	P Distinction in 12 credit points of Junior Chemistry N BCHM2011, BCHM2071, AGCH 2001 NB: The completion of 6 credit points of MBLG is highly recommended.	Semester 1
BCHM 2072	Human Biochemistry	6	P MBLG1001 or (6 credit points of Junior Biology or MBLG2771 or MBLG2871 for enrolments in 2005 only) and 12 credit points of Junior Chemistry N BCHM2972, BCHM2002, BCHM2102, BCHM2902, BCHM2112 NB: From 2006, the prerequisites will be MBLG1001 and 12 credit points of Junior Chemistry. The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 2
BCHM 2972	Human Biochemistry (Advanced)	6	P MBLG1001 or (6 credit points of Junior Biology or MBLG2771 or MBLG2871 for enrolments in 2005 only) and 12 credit points of Junior Chemistry). Entry also requires a Distinction in two of the prerequisite units of study. N BCHM2072, BCHM2002, BCHM2102, BCHM2902, BCHM2112 NB: The completion of 6 credit points of MBLG units of study is highly recommended. From 2006, the prerequisites will be Distinction in BCHM (2071 or 2971) or (Distinction in MBLG1001 and Distinction in 12 credit points of Junior Chemistry).	Semester 2
Senior units of study				
BCHM 3001	Mol Biology and Structural Biochemistry	12	P A total of at least 16 credit points of Intermediate MBLG and BCHM units. For BMedSc students: 32 credit points of Intermediate BMED units including BMED (2501, 2502 and 2504). N May not be counted with BCHM 3901. NB: From 2006 the prerequisites will be: (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units	Semester 1
BCHM 3002	Cellular and Medical Biochemistry	12	P A total of at least 16 credit points of Intermediate MBLG and BCHM units. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501, 2502 and 2504). N BCHM (3902 or 3004 or 3904) NB: From 2006 the prerequisites will be: (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units	Semester 2
BCHM 3005	Computational Biochemistry		NB: *** No info available for 2005, ***	
BCHM 3098	Functional Genomics and Proteomics	6	A BCHM2011 P MBLG (2001 or 2901) or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504) NB: This unit of study is a requirement for all molecular biotechnology third-year students and recommended to all students majoring in biochemistry or enrolled in BSc (Bioinformatics) degrees.	Semester 1

3. Undergraduate tables and units of study

BCHM 3901	Mol Biology and Structural Biochem (Adv)	12	P Distinction in a total of at least 16 credit points from Intermediate MBLG and BCHM units. For BMedSc students: 32 credit points of Intermediate BMED units including Distinctions in BMED (2501, 2502 and 2504). N BCHM3001 NB: From 2006 the prerequisites will be: Distinctions in (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units	Semester 1
BCHM 3902	Cellular and Medical Biochemistry (Adv)	12	P Distinction in a total of at least 16 credit points from Intermediate MBLG and BCHM units. For BMedSc students: 32 credit points of Intermediate BMED units including Distinctions in BMED (2501, 2502 and 2504). N BCHM (3002 or 3004 or 3904). NB: From 2006 the prerequisites will be: Distinctions in (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units	Semester 2
BCHM 3905	Computational Biochemistry (Advanced)		NB: *** No info available for 2005. ***	
Biology				
For a major in Biology, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.				
Junior units of study				
BIOL 1001	Concepts in Biology	6	A No previous knowledge required. Students who have not taken HSC Biology are recommended to take the Biology Bridging Course. 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.	Summer, Semester 1
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: 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.	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 a biology bridging course before lectures commence. N BIOL1902	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 BIOL1903 or EDUH1016	Summer, Semester 2
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.				

3. Undergraduate tables and units of study

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 2901 or 2911). NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 1
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 either an additional 6 credit points of Junior Chemistry or 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 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) NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 1

3. Undergraduate tables and units of study

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
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 2001	Applied Plant Biochemistry	6	P 12 credit points of Junior Chemistry and 12 credit points of Junior Biology or in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 N PLNT2901, AGCH2001.	Semester 1
PLNT 2901	Applied Plant Biochemistry (Advanced)	6	P A Distinction average in 12 credit points of Junior Chemistry and 12 credit points of Junior Biology or in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 N PLNT2001, AGCH2001	Semester 1
PLNT 2002	Aust Flora: Ecology and Conservation	6	P 12 credit points of Junior Biology or in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 or BIOL1001 and ENVI1001 N PLNT2902, BIOL2004 or BIOL2904.	Semester 1
PLNT 2902	Aust Flora: Ecology & Conservation (Adv)	6	P Distinction average in 12 credit points of Junior Biology or in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 or BIOL1001 and ENVI1001 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 in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 or BIOL1001 and ENVI1001 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 in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 or BIOL1001 and ENVI1001 N PLNT2003, BIOL2003, BIOL2903, CROP2001	Semester 2
Senior units of study				
BIOL 3011	Ecophysiology	6	P 16 credit points of Intermediate Biology including BIOL (2002 or 2003 or 2006 or 2902 or 2903 or 2906). N BIOL3911. NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1a
BIOL 3911	Ecophysiology (Advanced)	6	P Distinction average in 16 credit points of Intermediate Biology including BIOL (2002 or 2003 or 2006 or 2902 or 2903 or 2906). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N BIOL3011 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1a

3. Undergraduate tables and units of study

BIOL 3012	Animal Physiology	6	P 16 credit points of Intermediate Biology including BIOL (2002 or 2003 or 2006 or 2902 or 2903 or 2906). N May not be counted with BIOL 3912. NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1b
BIOL 3912	Animal Physiology (Advanced)	6	P Distinction average in 16 credit points of Intermediate Biology including BIOL (2002 or 2003 or 2006 or 2902 or 2903 or 2906). 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 1b
BIOL 3013	Marine Biology	6	A MARS2002 P 16 credit points of Intermediate Biology, including BIOL (2001 or 2002 or 2003 or 2004 or 2901 or 2902 or 2903 or 2904). N BIOL3913. NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1b
BIOL 3913	Marine Biology (Advanced)	6	A MARS2002 P Distinction average in 16 credit points of Intermediate Biology including BIOL (2001 or 2002 or 2003 or 2004 or 2901 or 2902 or 2903 or 2904). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N BIOL3013. NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1b
BIOL 3014	Biology of Terrestrial Vertebrates	6	P 16 credit points of Intermediate Biology. N BIOL3914. NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1a
BIOL 3914	Biology of Terrestrial Vertebrates (Adv)	6	P Distinction average in 16 credit points of Intermediate Biology. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N BIOL3014. NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1a
BIOL 3015	Plant Systematics and Biogeography	6	P 16 credit points of Intermediate Biology including BIOL (2004 or 2904). N BIOL3915. NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1b
BIOL 3915	Plant Systematics and Biogeography (Adv)	6	P Distinction average in 16 credit points of Intermediate Biology including BIOL (2004 or 2904). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N BIOL3015. NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1b
BIOL 3017	Fungal Biology	6	P 16 credit points of Intermediate Biology, or 8 credit points of Intermediate Biology and 8 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 1a
BIOL 3917	Fungal Biology (Advanced)	6	P Distinction average in 16 credit points of Intermediate Biology, or 8 credit points of Intermediate Biology and 8 Intermediate credit points of either Microbiology or Geography, or their equivalent. N BIOL3017. NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 1a

3. Undergraduate tables and units of study

BIOL 3018	Applications of Recombinant DNA Tech	6	P MBLG (2001 or 2901) and MBLG (2002 or 2902) or 16 credit points of Intermediate Biology. For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. N BIOL3918 NB: In 2006 the prerequisites will be MBLG (2771 or 2871) and MBLG (2072 or 2972) or 12 credit points of Intermediate Biology.	Semester 1a
BIOL 3918	Applications of Recombinant DNA Tech Adv	6	P Distinction average in MBLG (2001 or 2901) and MBLG (2002 or 2902) or 16 credit points of Intermediate Biology. For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. N BIOL3018 NB: In 2006 the prerequisites will be MBLG (2771 or 2871) and MBLG (2072 or 2972) or 12 credit points of Intermediate Biology.	Semester 1a
BIOL 3021	Plant Development	6	P 16 credit points of Intermediate Biology including BIOL (2003 or 2903 or 2006 or 2906). N BIOL3931. NB: The completion of 6 credit points of MBLG is highly recommended. This unit will not be available from 2006.	Semester 2a
BIOL 3931	Plant Development (Advanced)	6	P Distinction average in 16 credit points of Intermediate Biology including BIOL (2003 or 2903 or 2006 or 2906). These requirements may be varied and students with lower averages should consult the unit Executive Officer. N BIOL3021. NB: The completion of 6 credit points of MBLG units of study is highly recommended. This unit will not be available from 2006.	Semester 2a
BIOL 3022	Plant Physiology	6	P 16 credit points of Intermediate Biology including BIOL (2003 or 2006 or 2903 or 2906). N BIOL3932. NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 2b
BIOL 3932	Plant Physiology (Advanced)	6	P Distinction average in 16 credit points of Intermediate Biology including BIOL (2003 or 2903 or 2006 or 2906). These requirements may be varied and students with lower averages should contact the unit Executive Officer. N BIOL3022. NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 2b
BIOL 3023	Ecological Methods	6	P 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2002 or 2902 or 2004 or 2904) N BIOL3923, MARS3102 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 2a
BIOL 3923	Ecological Methods (Advanced)	6	P Distinction average in BIOL (2001 or 2901) and (2002 or 2902), or in 16 credit points of Intermediate Biology including BIOL (2004 or 2904) N BIOL3023, MARS3102 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 2a
BIOL 3025	Evolutionary Genetics & Animal Behaviour	6	P 16 credit points from MBLG (2001 or 2901 or 2002 or 2902) and Intermediate Biology units. For BMedSc students: 32 credit points of Intermediate BMED units including BMED2502. N BIOL3925, BIOL3928 NB: In 2006 the MBLG prerequisites will be replaced by 12 credit points from MBLG (2771 or 2871) and MBLG (2072 or 2972).	Semester 2a

3. Undergraduate tables and units of study

BIOL 3925	Evolutionary Gen. & Animal Behaviour Adv	6	P Distinction average in 16 credit points from MBLG (2001 or 2901 or 2002 or 2902) and Intermediate Biology units. For BMedSc students 32 credit points of Intermediate BMED units including Distinction in BMED2502. These requirements may be varied and students with lower averages should consult the unit Executive Officer. N BIOL (3025 or 3928). NB: In 2006 the prerequisites will be: Distinction average in 12 credit points from MBLG (2771 or 2871) and MBLG (2072 or 2972).	Semester 2a
BIOL 3026	Developmental Genetics	6	P MBLG (2001 or 2901) and MBLG (2002 or 2902) or 16 credit points of Intermediate Biology. For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. N BIOL3926, BIOL3929 NB: In 2006 the MBLG prerequisites will be replaced by 12 credit points from MBLG (2771 or 2871) and MBLG (2072 or 2972).	Semester 2b
BIOL 3926	Developmental Genetics (Advanced)	6	P Distinction average in MBLG (2001 or 2901 or 2002 or 2902) or 16 credit points of Intermediate Biology. For BMedSc students 32 credit points of Intermediate BMED units including Distinction in BMED2502. These requirements may be varied and students with lower averages should consult the unit Executive Officer. N BIOL (3026 or 3929). NB: In 2006 the prerequisites will be: 12 credit points from MBLG (2771 or 2871) and MBLG (2072 or 2972).	Semester 2b
BIOL 3027	Bioinformatics and Genomics	6	P MBLG (2001 or 2101 or 2901) and MBLG (2002 or 2902) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. N BIOL3927 NB: A recommended unit of study for third year students enrolled in the BSc (Bioinformatics) degree. In 2006 the prerequisites will be: MBLG (2771 or 2871)	Semester 1b
BIOL 3927	Bioinformatics and Genomics (Advanced)	6	P Distinction MBLG (2001 or 2901) and MBLG (2002 or 2902) or Distinction average in 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should consult the unit Executive Officer. N BIOL3027. NB: A recommended unit of study for third year students enrolled in the BSc (Bioinformatics) degree. In 2006 the prerequisites will be: MBLG (2771 or 2871) and MBLG (2002 or 2902) or Distinction average in 12 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2006 or 2906).	Semester 1b
BIOL 3040	Marine Ecology	6	P 16 credit points of Intermediate Biology. C BIOL (3023 or 3923). N BIOL3940, MARS3102 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 2b
BIOL 3940	Marine Ecology (Advanced)	6	P Distinction average in 16 credit points of Intermediate Biology. C BIOL (3023 or 3923). N BIOL (3040 or 3024 or 3924), MARS3102 NB: From 2006 the prerequisites will be: Distinction average in 12 cp of Intermediate Biology	Semester 2b

3. Undergraduate tables and units of study

BIOL 3041	Terrestrial Ecology	6	P BIOL (2001 or 2901) and BIOL (2002 or 2902) C BIOL (3023 or 3923) N BIOL (3941 or 3024 or 3924) NB: The completion of 6 credit points of MBLG units is highly recommended. From 2006 the prerequisites will be: BIOL (2011 or 2911) and BIOL (2012 or 2912)	Semester 2b
BIOL 3941	Terrestrial Ecology (Advanced)	6	P Distinction average in BIOL (2001 or 2901) and (2002 or 2902) C BIOL (3023 or 3923) N BIOL (3041 or 3924 or 3024) NB: The completion of 6 credit points of MBLG units is highly recommended. From 2006 the prerequisites will be: Distinction average in BIOL (2011 or 2911) and BIOL (2012 or 2912)	Semester 2b
BIOL 3042	Plant Ecology	6	P 16 credit points of Intermediate Biology including BIOL (2004 or 2904). C BIOL (3023 or 3923). N BIOL3942	Semester 2b
BIOL 3942	Plant Ecology (Advanced)	6	P Distinction average in 16 credit points of Intermediate Biology including BIOL (2004 or 2904). C BIOL (3023 or 3923). N BIOL3042. NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 2b
Cell Pathology				
For a major in Cell Pathology, the minimum requirement is 24 credit points from:				
(i) CPAT 3101; and				
(ii) any one of the units of study listed below.				
Senior units of study				
The completion of 6 credit points of MBLG units of study is highly recommended.				
ANAT 3001	Microscopy and Histochemistry	12	P ANAT 2001. For BMedSc students: 32 credit points of Intermediate BMED units including BMED (2503, 2504, and 2505). NB: From 2006 the prerequisites will be: ANAT2008 For BMedSc students, 42 credit points of Intermediate BMED units including BMED (2803, 2804, 2805).	Semester 1
ANAT 3002	Cells and Development	12	A (i) an understanding of the basic structure of vertebrates; (ii) an understanding of basic biochemistry and genetics P ANAT2001. For BMedSc students, 32 credit points of Intermediate BMED units including BMED (2502, 2503, 2504, and 2505). N ANAT 3003 NB: From 2006 the prerequisites will be: ANAT2008 or ANAT2011 and MBLG (2771 or 2871). For BMedSc students, 42 credit points of intermediate BMED units including BMED (2802, 2803, 2804, 2806).	Semester 2
BCHM 3001	Mol Biology and Structural Biochemistry	12	P A total of at least 16 credit points of Intermediate MBLG and BCHM units. For BMedSc students: 32 credit points of Intermediate BMED units including BMED (2501, 2502 and 2504). N May not be counted with BCHM 3901. NB: From 2006 the prerequisites will be: (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units	Semester 1
BCHM 3901	Mol Biology and Structural Biochem (Adv)	12	P Distinction in a total of at least 16 credit points from Intermediate MBLG and BCHM units. For BMedSc students: 32 credit points of Intermediate BMED units including Distinctions in BMED (2501, 2502 and 2504). N BCHM3001 NB: From 2006 the prerequisites will be: Distinctions in (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units	Semester 1

3. Undergraduate tables and units of study

BCHM 3002	Cellular and Medical Biochemistry	12	P A total of at least 16 credit points of Intermediate MBLG and BCHM units. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501, 2502 and 2504). N BCHM (3902 or 3004 or 3904) NB: From 2006 the prerequisites will be: (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units	Semester 2
BCHM 3902	Cellular and Medical Biochemistry (Adv)	12	P Distinction in a total of at least 16 credit points from Intermediate MBLG and BCHM units. For BMedSc students: 32 credit points of Intermediate BMED units including Distinctions in BMED (2501, 2502 and 2504). N BCHM (3002 or 3004 or 3904). NB: From 2006 the prerequisites will be: Distinctions in (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units	Semester 2
BMED 3004	Infectious Diseases	12	P 32 credit points of Intermediate BMED units including BMED 2506.	Semester 2
MICR 3001	General and Medical Microbiology	12	P MBLG (2001 or 2101 or 2901) and [12 credit points of Intermediate MICR units or MICR (2011 and 2012) or MICR 2909]. For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2506. N MICR3901. NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) and MBLG (1001 or 2001 or 2901 or 2771 or 2871).	Semester 1
MICR 3901	General and Medical Microbiology (Adv)	12	P MBLG (2101 or 2001 or 2901) and [12 credit point of Intermediate MICR units including one Distinction, or MICR (2011 and 2012) including one Distinction, or Distinction in MICR 2909. For BMedSc: 32 credit points of Intermediate BMED units including Distinction in BMED 2506. N MICR 3001. NB: From 2006 the prerequisites will be: MICR (2021 or 2921 or 2001 or 2901 or 2024) and MICR (2022 or 2922 or 2002 or 2902), including 6 credit points at Distinction level and MBLG (1001 or 2001 or 2901 or 2771 or 2871).	Semester 1
MICR 3002	Molecular/Environmental Microbiology	12	P 12 credit points of Intermediate Microbiology and MBLG (2101 or 2001 or 2901). N MICR (3902 or 3004 or 3904) NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) and MBLG (1001 or 2001 or 2901 or 2771 or 2871).	Semester 2
MICR 3902	Molecular/Environmental Microbiology Adv	12	P 12 credit points of Intermediate Microbiology including one Distinction, and MBLG (2101 or 2001 or 2901). N MICR (3002 or 3004 or 3904) NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) at Distinction level and MBLG (1001 or 2001 or 2901 or 2771 or 2871).	Semester 2

3. Undergraduate tables and units of study

PHSI 3004	Human Cellular Physiology	12	P For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). For others: PHSI (2001 or 2101 or 2901) and PHSI (2002 or 2102 or 2902) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901). N PHSI 3904 NB: From 2006 the prerequisites will be: PHSI (2001 or 2101 or 2901 or 2005 or 2905), PHSI (2002 or 2102 or 2902 or 2006 or 2906) and MBLG (2001 or 2101 or 1001) or BCHM(2001 or 2101 or 2901). From 2006 the prerequisites will be: Except for BMedSc students, PHSI (2101 or 2001 or 2901 or 2005 or 2905), ANAT (2003 or 2010), 6 credit points of MBLG plus at least 6 credit points of Intermediate Science units of study. For BMedSc: 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).	Semester 1
PHSI 3904	Human Cellular Physiology (Advanced)	12	P For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). For others: PHSI (2001 or 2101 or 2901) and PHSI (2002 or 2102 or 2902) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901) N PHSI3004 NB: Department permission required for enrolment. Permission is required for enrolment. Available to selected students who have achieved an average of at least 65 in the prerequisite units of study. From 2006 the prerequisites will be: PHSI (2001 or 2101 or 2901 or 2005 or 2905), PHSI (2002 or 2102 or 2902 or 2006 or 2906) and MBLG (2001 or 2101 or 1001) or BCHM(2001 or 2101 or 2901). For BMedSc: 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).	Semester 1
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 1905 or 1906 or 1909	Semester 1
CHEM 1002	Fundamentals of Chemistry 1B	6	P CHEM (1001 or 1101) or equivalent N CHEM (1102 or 1902 or 1904 or 1907 or 1908)	Semester 2
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 1905 or 1906 or 1909)	Summer, Semester 1, Semester 2
CHEM 1102	Chemistry 1B	6	P CHEM (1101 or 1901) or a Distinction in CHEM1001 or equivalent C Recommended concurrent units of study: 6 credit points of Junior Mathematics N CHEM (1002 or 1902 or 1904 or 1907 or 1908)	Summer, Semester 1, Semester 2
CHEM 1901	Chemistry 1A (Advanced)	6	P UAI of at least 96.4 and HSC Chemistry result >80, 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 1905 or 1906 or 1909) NB: Department permission required for enrolment.	Semester 1

3. Undergraduate tables and units of study

CHEM 1902	Chemistry 1B (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 1907 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 1905 or 1906 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.	Semester 1
CHEM 1904	Chemistry 1B (Special Studies Program)	6	P Distinction in CHEM 1903. C Recommended concurrent units of study: 6 credit points of Junior Mathematics including MATH (1003 or 1903). N May not be counted with CHEM (1002 or 1102 or 1902 or 1907 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.	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 2006 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 C BSc candidates CHEM (2101 or 2301 or 2401 or 2502 or 2901 or 2911 or 2915) N CHEM3107 or CHEM3197 NB: To enrol in Senior Chemistry in 2006 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 Credit 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 2915)	Semester 1
CHEM 2912	Chemical Structure and Stability (Adv)	6	P Credit 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 2916)	Semester 2

3. Undergraduate tables and units of study

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: 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.	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: 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.	Semester 2
Senior units of study				
CHEM 3100	Chemistry of the Main Group	3	P CHEM (2001 or 2101 or 2301 or 2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). For students in BSc (ENVI): CHEM (1102 or 1902) and ENVI2002. C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3 or 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from each of Groups 2 and 3. Students taking one other senior chemistry unit have no restriction placed on their selection of senior chemistry units. For BSc (Environmental) students CHEM3209. N CHEM3190 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916). For students in BSc (ENVI): CHEM (1102 or 1902) and ENVI2002.	Semester 1

3. Undergraduate tables and units of study

CHEM 3103	Organometallic and Catalytic Chemistry	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM (3105 and 3205 and 3306). N CHEM3193 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)	Semester 2
CHEM 3104	Symmetry and Vibrational Spectra	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3194, CHEM3304 or CHEM3394 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3105	Biol/Environ Transition Metal Chem	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BSc (Environmental) candidates CHEM (1102 or 1902) and ENVI2002; for BMedSc candidates: Credit in CHEM ((2311 and 2312) or 2903); for BSc (Molecular Biology and Genetics) candidates: CHEM2903; for BSc (MOBT) candidates: MOBT (2001 and 2002) and CHEM ((2311 and 2312) or 2903). C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3205 and CHEM3306 and one other Semester 2 Senior Chemistry unit selected from any Group. For BSc (Environmental) students CHEM3305. N CHEM3195 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BSc (Environmental) candidates CHEM (1102 or 1902) and ENVI 2002; for BMedSc candidates: Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913); for BSc (Molecular Biology and Genetics) candidates: CHEM (2903 or 2913); for BSc (MOBT) candidates: MOBT2102 and CHEM ((2311 and 2312) or 2403 or 2903 or 2913).	Semester 2

3. Undergraduate tables and units of study

CHEM 3106	Inorganic Materials Chemistry	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. N CHEM3196 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)	Semester 2
CHEM 3107	Forensic and Analytical Chemistry	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3197, CHEM2404 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3108	Supramolecular Materials	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. N CHEM3198 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)	Semester 2

3. Undergraduate tables and units of study

CHEM 3109	Transition Metal Chemistry	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3199 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3190	Chemistry of the Main Group (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or 2311 and 2312 or 2903 or 2901) and CHEM (2302 or 2902) C Either 1 or 3 or 5 or 7 other Senior Chemistry units of study. Students taking 3 or 5 or 7 other senior chemistry units are to select units from Groups 1-3 including at least one unit from each of Groups 2 and 3. Students taking one other senior chemistry unit have no restriction placed on their selection of senior chemistry units. N CHEM3100 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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916).	Semester 1
CHEM 3193	Organometallic and Catalytic Chem (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMed-Sc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3195 and 3295 and 3396. N CHEM3103 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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)	Semester 2

3. Undergraduate tables and units of study

CHEM 3194	Symmetry and Vibrational Spectra (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3104, CHEM3304 or CHEM3394 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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3195	Biol/Environ Transition Metal Chem (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902); for BMed-Sc candidates: a high WAM and a Distinction in CHEM {(2311 and 2312) or 2903}); for BSc (Molecular Biology and Genetics) candidates: a high WAM and a Distinction in CHEM2903; for BSc (MOBT) candidates: MOBT (2001 and 2002), a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903). C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM3295 and CHEM3396 and one other semester 2 Senior advanced Chemistry unit selected from any Group. N CHEM3105 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916); for BMedSc candidates: a high WAM and a Distinction in CHEM {(2311 and 2312) or 2403 or 2903 or 2913}; for BSc (Molecular Biology and Genetics) candidates: a high WAM and a Distinction in CHEM (2903 or 2913); for BSc (MOBT) candidates: MOBT2102, a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913).	Semester 2

3. Undergraduate tables and units of study

CHEM 3196	Inorganic Materials Chemistry (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMed-Sc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMed Sci and BSc(MBLG) candidates N CHEM3195 and 3295 and 3396. 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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)	Semester 2
CHEM 3197	Forensic and Analytical Chemistry (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3107, CHEM2404 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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916).	Semester 1

3. Undergraduate tables and units of study

CHEM 3198	Supramolecular Materials (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMed-Sc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMed Sci and BSc(MBLG) candidates N CHEM3195 and 3295 and 3396. 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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)	Semester 2
CHEM 3199	Transition Metal Chemistry (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3109 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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3200	Stereochemistry and Mechanisms	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3290 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1

3. Undergraduate tables and units of study

CHEM 3203	Bioorganic Chemistry	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3293 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3204	Heterocyclic Chemistry	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. N CHEM3294 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)	Semester 2
CHEM 3205	Medicinal and Biological Chemistry	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902); for BMedSc candidates: CHEM ((2311 and 2312) or 2903); for BSc (Molecular Biology and Genetics) candidates: CHEM2903; for BSc (MOBT) candidates: MOBT (2001 and 2002) and CHEM ((2311 and 2312) or 2903). C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and CHEM 3306 and one other Semester 2 Senior Chemistry unit selected from any Group. N CHEM3295 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916); for BMedSc candidates: Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913); for BSc (Molecular Biology and Genetics) candidates: CHEM (2903 or 2913); for BSc (MOBT) candidates: MOBT2102, and CHEM ((2311 and 2312) or 2403 or 2903 or 2913).	Semester 2

3. Undergraduate tables and units of study

CHEM 3206	Radical and Pericyclic Chemistry	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. N CHEM3296 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)	Semester 2
CHEM 3207	Synthetic Methods	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. N CHEM3297 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)	Semester 2
CHEM 3209	Organic Structures From Spectra	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902), for BSc (Environmental) candidates CHEM (1102 or 1902) and ENVI2002, for BSc(MOBT) candidates MOBT2001, MOBT2002, CHEM ((2311 and 2312) or 2903) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. Students enrolled in BSc(MOBT) are to take CHEM3203. For BSc (Environmental) students CHEM3100. N CHEM3299 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BSc (Environmental) candidates CHEM (1102 or 1902) and ENVI2002, for B.Sci. (MOBT) candidates MOBT2001, MOBT2002, CHEM ((2311 and 2312) or 2403 or 2903 or 2913)	Semester 1

3. Undergraduate tables and units of study

CHEM 3290	Stereochemistry and Mechanisms (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3200 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3293	Bioorganic Chemistry (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3203 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3294	Heterocyclic Chemistry (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMed-Sc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM(3195 and 3295 and 3396). N CHEM3204 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)	Semester 2

3. Undergraduate tables and units of study

CHEM 3295	Medicinal and Biological Chemistry (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902); for BMedSc candidates: a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903); for BSc (Molecular Biology and Genetics) candidates: a high WAM and a Distinction in CHEM (2903); for BSc (MOBT) candidates: MOBT (2001 and 2002), a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903). C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3195 and CHEM 3396 and one other Semester 2 Senior Advanced Chemistry unit selected from any Group. N CHEM3205 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916); for BMedSc candidates: a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913); for BSc (Molecular Biology and Genetics) candidates: a high WAM and a Distinction in CHEM (2903 or 2913); for BSc (MOBT) candidates: MOBT2102, a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913).	Semester 2
CHEM 3296	Radical and Pericyclic Chemistry (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902); for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903); for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM (3195 and 3295 and 3396). N CHEM3206 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)	Semester 2

3. Undergraduate tables and units of study

CHEM 3297	Synthetic Methods (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMed-Sc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM(3195 and 3295 and 3396). N CHEM3207 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)	Semester 2
CHEM 3299	Organic Structures From Spectra (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. Not available to BSc (MOBT) students. N CHEM3209 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3301	Quantum Chemistry	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3391 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1

3. Undergraduate tables and units of study

CHEM 3302	Chemical Dynamics	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3392 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3303	Surfaces and Colloids	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3393 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3304	Principles of Spectroscopy	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM(3394 or 3104 or 3194) NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3305	Atmospheric and Photochemistry	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BSc (Environmental) candidates CHEM (1102 or 1902) and ENVI 2002, for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. For BSc (Environmental) candidates CHEM 3105 N CHEM3395 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BSc (Environmental) candidates CHEM (1102 or 1902) and ENVI 2002, for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)	Semester 2

3. Undergraduate tables and units of study

CHEM 3306	Biophysical Chemistry	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902); for BMedSc candidates: Credit in CHEM ((2311 and 2312) or 2903); for BSc (Molecular Biology and Genetics) candidates: CHEM2903; for BSc (MOBT) candidates: MOBT (2001 and 2002), and CHEM ((2311 and 2312) or 2903). C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc(MBG) candidates CHEM 3105 and 3205 and one other Semester 2 Senior Chemistry unit selected from any Group. N CHEM3396 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916); for BMedSc candidates: Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913); for BSc (Molecular Biology and Genetics) candidates: CHEM (2903 or 2913); for BSc (MOBT) candidates: MOBT2102, and CHEM ((2311 and 2312) or 2403 or 2903 or 2913).	Semester 2
CHEM 3307	Polymer Chemistry	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. N CHEM3397 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)	Semester 2

3. Undergraduate tables and units of study

CHEM 3308	Physical Chemistry of Materials	3	P CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. N CHEM3398 NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)	Semester 2
CHEM 3391	Quantum Chemistry (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3301 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3392	Chemical Dynamics (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3302 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1

3. Undergraduate tables and units of study

CHEM 3393	Surfaces and Colloids (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. N CHEM3303 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3394	Principles of Spectroscopy (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902) C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units N CHEM(3304 or 3104 or 3194) 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)	Semester 1
CHEM 3395	Atmospheric and Photochemistry (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMed-Sc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3195 and 3295 and 3396. N CHEM3305 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)	Semester 2

3. Undergraduate tables and units of study

CHEM 3396	Biophysical Chemistry (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902); for BMed-Sc candidates: a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903); for BSc (Molecular Biology and Genetics) candidates: a high WAM and a Distinction in CHEM2903; for BSc (MOBT) candidates: MOBT (2001 and 2002), a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903). C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3195 and 3295 and one other Semester 2 Senior Advanced Chemistry unit selected from any Group. N CHEM3306 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916); for BMedSc candidates: a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913); for BSc (Molecular Biology and Genetics) candidates: a high WAM and a Distinction in CHEM (2903 or 2913); for BSc (MOBT) candidates: MOBT2102, a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913).	Semester 2
CHEM 3397	Polymer Chemistry (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902); for BMed-Sc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903); for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3195 and 3295 and 3396. N CHEM3307 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)	Semester 2

CHEM 3398	Physical Chemistry of Materials (Adv)	3	P By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMed-Sc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903 C Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3195 and 3295 and 3396. N CHEM3308 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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)	Semester 2
Computational Science				
For a major in Computational Science the minimum requirement is:				
(i) 12 credit points from the core Senior units of study; and				
(ii) a minimum of 12 credit points from the elective Senior units of study, to be chosen from units of study listed in this subject area.				
Junior units of study				
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
Senior core units of study				
COSC 3001	Scientific Computing	4	A Programming experience in MATLAB P 12 credit points chosen from Junior Mathematics and Statistics, 16 credit points of Intermediate units in Science subject areas. N COSC3901, PHYS3301, PHYS3901	Semester 1
COSC 3901	Scientific Computing (Advanced)	4	A Programming experience in MATLAB P 12 credit points chosen from Junior Mathematics and Statistics and 16 credit points of Intermediate units in Science subject areas with a Credit average. N COSC3001, PHYS3301, PHYS3901	Semester 1

3. Undergraduate tables and units of study

COSC 3002	Parallel Computing and Visualisation	4	A Programming experience in C and MATLAB or equivalent P 12 credit points from the Science subject areas of Junior Mathematics and Statistics and 16 credit points of Intermediate units in Science subject areas. N COSC3601, COSC3902, PHYS3303, PHYS3933	Semester 2
COSC 3902	Parallel Computing & Visualisation (Adv)	4	A Programming experience in C and MATLAB or equivalent P 12 credit points from the Science subject areas of Junior Mathematics and Statistics and 16 credit points, average grade Credit, of Intermediate units in Science subject areas. N COSC3601, COSC3902, PHYS3303, PHYS3933	Semester 2
MATH 3016	Mathematical Computing I	4	P 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903 or 1906 or 1907. N May not be counted with MATH 3916.	Semester 1
MATH 3916	Mathematical Computing I (Advanced)	4	P 8 credit points of Intermediate Mathematics and one of MATH 1903 or 1907 or Credit in MATH 1003 N May not be counted with MATH 3016	Semester 1
Senior elective units of study				
BCHM 3005	Computational Biochemistry		NB: *** No info available for 2005. ***	
BCHM 3905	Computational Biochemistry (Advanced)		NB: *** No info available for 2005. ***	
BINF 3001	Bioinformatics Project	8	A 12 credit points from Junior units of study in Software Development (SOFT) and/or Computational Science (COSC) P SOFT (2004 or 2904) and 16 credit points from Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and Genetics and/or Pharmacology N May not be counted with COMP 3206 NB: MBLG2002/2902, BIOL3027/3927 and BCHM3908 are highly recommended.	Semester 2
BIOL 3023	Ecological Methods	6	P 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2002 or 2902 or 2004 or 2904) N BIOL3923, MARS3102 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 2a
BIOL 3923	Ecological Methods (Advanced)	6	P Distinction average in BIOL (2001 or 2901) and (2002 or 2902), or in 16 credit points of Intermediate Biology including BIOL (2004 or 2904) N BIOL3023, MARS3102 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 2a
BIOL 3027	Bioinformatics and Genomics	6	P MBLG (2001 or 2101 or 2901) and MBLG (2002 or 2902) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. N BIOL3927 NB: A recommended unit of study for third year students enrolled in the BSc (Bioinformatics) degree. In 2006 the prerequisites will be: MBLG (2771 or 2871)	Semester 1b

3. Undergraduate tables and units of study

BIOL 3927	Bioinformatics and Genomics (Advanced)	6	P Distinction MBLG (2001 or 2901) and MBLG (2002 or 2902) or Distinction average in 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should consult the unit Executive Officer. N BIOL3027. NB: A recommended unit of study for third year students enrolled in the BSc (Bioinformatics) degree. In 2006 the prerequisites will be: MBLG (2771 or 2871) and MBLG (2002 or 2902) or Distinction average in 12 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2006 or 2906).	Semester 1b
COSC 3701	Computational Science Project	8	A Able to program in a standard language. P 16 credit points of intermediate level natural sciences plus at least one of COSC (1001 or 1901 or 1002 or 1902) or SOFT (1001 or 1901) or MATH (2003 or 2903) or PHYS (2001 or 2901 or 2002 or 2902)	Semester 2
GEOS 3004	Geophysics, Imaging, Oil/Ore Production	6	P 16 credit points of Intermediate Science units of study or CIVL2409 N GEOP3202	Semester 2
GEOS 3007	Remote Sensing: Imaging the Earth	6	P 16 credit points of Intermediate Science units of study or CIVL2409 N GEOL3101	Semester 1b
MARS 3005	Marine Geophysical Data Analysis	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1a
MARS 3006	Dynamics of Ocean Basins and Margins	6	A Prior completion of MARS3005 is highly recommended P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1b
MARS 3105	Coastal Oceanography & Sediment Dynamics	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 N GEOL3104 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 2a
MATH 3003	Ordinary Differential Equations	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2001 or 2901) N MATH3923	Semester 1
MATH 3018	Partial Differential Equations and Waves	4	P MATH (2001 or 2901) and MATH (2005 or 2905) N May not be counted with MATH 3921	Semester 1
MATH 3921	P D E and Waves (Advanced)	4	P MATH (2901 or credit in 2001) and (2905 or credit in 2005) N May not be counted with MATH 3018	Semester 1
MATH 3019	Signal Processing	4	P MATH (2001 or 2901) and MATH (2005 or 2905) N May not be counted with MATH 3919	Semester 1

3. Undergraduate tables and units of study

MATH 3919	Signal Processing (Advanced)	4	P MATH 2905 or Credit in MATH 2005 N May not be counted with MATH 3019	Semester 1
MULT 3004	Computer Graphics	4	P COMP (2111 or 2811 or 2002 or 2902 or 2160 or 2860) and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and MATH (1002 or 1902) N MULT 3904 or COMP (3004 or 3904).	Semester 2
MULT 3904	Computer Graphics (Advanced)	4	P COMP (2111 or 2811 or 2002 or 2902 or 2160 or 2860) and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and MATH (1002 or 1902) and Distinction in a COMP or MULT or SOFT unit at 2000-level or above. N MULT3004 or COMP (3004 or 3904)	Semester 2
STAT 3002	Applied Linear Models	4	P STAT 2004 (or STAT 1022 for Arts students) and MATH (1002 or 1902). N May not be counted with STAT 3902	Semester 1
STAT 3902	Linear Models (Advanced)	4	P STAT 2004 and (STAT 2903 or Credit in 2003) and (MATH 2002 or 2902) N May not be counted with STAT 3002	Semester 1
STAT 3003	Time Series Analysis	4	P STAT (2003 or 2903) N May not be counted with STAT3903	Semester 1
STAT 3903	Time Series Analysis (Advanced)	4	P STAT2903 or Credit or better in STAT2003 N STAT3003	Semester 1
STAT 3004	Design of Experiments	4	A STAT3002 P STAT2004 (or STAT1022 for Arts students) and MATH (1002 or 1902) N STAT3904	Semester 2
STAT 3904	Design of Experiments (Advanced)	4	P STAT 3902 or credit or better in STAT 3002. N May not be counted with STAT 3004.	Semester 2
Computer Science				
For a major in Computer Science, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.				
Junior units of study				
SOFT 1001	Software Development 1	6	N May not be counted with SOFT 1901 or COMP (1001 or 1901)	Summer, Semester 1, Semester 2
SOFT 1901	Software Development 1 (Adv)	6	A HSC Mathematics Extension 1 P UA1 at least that for acceptance into BSc(Adv) degree program. N May not be counted with SOFT 1001 or COMP (1001 or 1901) NB: Department permission required for enrolment. Entry requires departmental permission, except for students in BSc(Adv), BCST(Adv) or BIT degrees	Semester 1, Semester 2
SOFT 1002	Software Development 2	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) N May not be counted with SOFT 1902 or COMP (1002 or 1902)	Summer, Semester 1, Semester 2
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) NB: Department permission required for enrolment.	Semester 2, Semester 1
Intermediate units of study				
COMP 2160	Data Structures	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) C MATH (1004 or 1904 or 2009 or 2011 or 2069 or 2969) N May not be counted with 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. C MATH (1004 or 1904 or 2009 or 2011 or 2069 or 2969) N May not be counted with COMP(2111 or 2811 or 2002 or 2902 or 2160)	Semester 1

3. Undergraduate tables and units of study

INFO 2000	Systems Analysis and Design	4	P ISYS 1003 or INFO 1000 or INFS 1000 or 6 credit points of Computational Science or SOFT (1001 or 1901) or COMP (1001 or 1901) N May not be counted with INFO 2900	Summer
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO1000 level P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC N INFO (2000 or 2810 or 2900)	Semester 1
INFO 2810	Systems Analysis and Modelling (Adv)	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 level P ISYS1003 or INFS1000 or INFO1000 or INFO1003 or SOFT (1001 or 1901) or COMP (1001 or 1901) or 6 crpts of COSC; and Distinction in one of these or in a 2000-level or above INFO, ISYS or SOFT unit. N INFO (2000 or 2110 or 2900)	Semester 1
INFO 2120	Database Systems 1	6	A Basics of data modeling, experience working with information technology tools P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC 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 ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC; Distinction in one of these or in a 2000-level or above unit in INFO, ISYS or SOFT. N INFO (2005 or 2120 or 2905)	Semester 2
NETS 2150	Fundamentals of Networking	6	P ELEC1601 or SOFT (1001 or 1901) N NETS (2009 or 2909 or 2850), ELEC (3506 or 3504)	Semester 1
NETS 2850	Fundamentals of Networking (Advanced)	6	P ELEC1601 or SOFT (1001 or 1901) in 2005, 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 2004	Software Development Methods 1	4	P SOFT (1002 or 1902) or COMP (1002 or 1902) N May not be counted with SOFT (2904, 2130 or 2830) or COMP (2004 or 2904) NB: Department permission required for enrolment.	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 (2001 or 2004 or 2830).	Semester 2
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).	Semester 2
Senior units of study				
COMP 3002	Artificial Intelligence	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and COMP (2003 or 2903) and 8 credit points 2000-level MATH and/or STAT and/or ECMT N May not be counted with COMP 3902	Semester 1
COMP 3902	Artificial Intelligence (Advanced)	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and COMP (2003 or 2903) and 8 credit points 2000-level MATH and/or STAT and/or ECMT and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. N May not be counted with COMP 3002	Semester 1
COMP 3111	Algorithms 2	4	A MATH 2009 P COMP (2111 or 2811 or 2002 or 2902) and MATH (1004 or 1904 or 2009 or 2011) and MATH (1005 or 1905) N May not be counted with COMP (3811 or 3001 or 3901)	Semester 1

3. Undergraduate tables and units of study

COMP 3811	Algorithms 2 (Advanced)	4	P COMP (2002 or 2902 or 2111 or 2811) and MATH (1004 or 1904 or 2009 or 2011) and MATH (1005 or 1905). Also Distinction in a COMP, SOFT or MATH intermediate unit. N COMP (3111 or 3001 or 3901)	Semester 1
COMP 3310	Theory of Computation	6	P COMP (2160 or 2860 or 2111 or 2811 or 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 3005	Organisational Database Systems	4	P INFO (2000 or 2900) and INFO (2005 or 2905) N INFO 3905 or COMP (3005 or 3905)	Semester 1
INFO 3905	Organisational Database Systems (Adv)	4	P INFO (2000 or 2900) and INFO (2005 or 2905) and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above N COMP (3005 or 3905) or INFO 3005	Semester 1
MULT 3004	Computer Graphics	4	P COMP (2111 or 2811 or 2002 or 2902 or 2160 or 2860) and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and MATH (1002 or 1902) N MULT 3904 or COMP (3004 or 3904).	Semester 2
MULT 3904	Computer Graphics (Advanced)	4	P COMP (2111 or 2811 or 2002 or 2902 or 2160 or 2860) and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and MATH (1002 or 1902) and Distinction in a COMP or MULT or SOFT unit at 2000-level or above. N MULT3004 or COMP (3004 or 3904)	Semester 2
MULT 3018	Multimedia Interaction	4	P SOFT (2004 or 2904) or COMP (2004 or 2904) N May not be counted with MULT 3918	Semester 1
MULT 3918	Multimedia Interaction (Advanced)	4	P 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 MULT3018	Semester 1
MULT 3019	Digital Media	4	P COMP (2111 or 2811 or 2002 or 2902) and MATH (1001 or 1901) and MATH (1002 or 1902) and MATH (1003 or 1903). N May not be counted with MULT 3919.	Semester 1
MULT 3919	Digital Media (Advanced)	4	P COMP (2111 or 2811 or 2002 or 2902) and MATH (1001 or 1901) and MATH (1002 or 1902) and MATH (1003 or 1903) and Distinction in a MULT or SOFT unit at 2000-level or above. N May not be counted with MULT 3019.	Semester 1
NETS 3007	Network Protocols	4	P [[NETS (2008 or 2908) and NETS (2009 or 2909)] or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901). N NETS3907 or COMP (3007 or 3907) or ELEC (3506 or 3604)	Semester 1
NETS 3907	Network Protocols (Advanced)	4	P [[NETS (2008 or 2908) and NETS (2009 or 2909)] or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and Distinction in a NETS or SOFT unit at 2000-level or above. N NETS3007, COMP 3007, COMP3907, ELEC3506, ELEC3604	Semester 1
NETS 3009	Operating Systems	4	P [NETS (2008 or 2908) or ELEC (1601 or 2601)] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT(2001 or 2901). N NETS3909 or COMP (3009 or 3909)	Semester 2
NETS 3909	Operating Systems (Advanced)	4	P [NETS (2008 or 2908) or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT(2001 or 2901) and Distinction in a NETS or SOFT unit at 2000-level or above. N May not be counted with NETS 3009 or COMP (3009 or 3909).	Semester 2

3. Undergraduate tables and units of study

NETS 3016	Computer and Network Security	4	A MATH (1004 and 1005). P [[NETS (2008 or 2908) and NETS (2009 or 2909)] or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)]. N NETS 3916, ELEC 5610, ELEC5616	Semester 1
NETS 3916	Computer and Network Security (Advanced)	4	A MATH (1004 and 1005). P [[NETS (2008 or 2908) and NETS (2009 or 2909)] or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and Distinction in a NETS or SOFT unit at 2000-level or above. N NETS 3016, ELEC 5610, ELEC5616.	Semester 1
NETS 3017	Network Programming and Distributed Apps	4	P [[NETS (2008 or 2908) and NETS (2009 or 2909)] or NETS (2150 or 2850) or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901). N NETS 3917, ELEC 3604, ELEC3506	Semester 2
NETS 3917	Network Prog & Distributed Apps (Adv)	4	P [[NETS (2008 or 2908) and NETS (2009 or 2909)] or NETS2150 or NETS2850 or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and Distinction in a NETS or SOFT unit at 2000-level or above. N NETS3017, ELEC3604, ELEC3506	Semester 2
SOFT 3101	Object-Oriented Software Design	4	P SOFT (2001 or 2901) and INFO (2000 or 2900) and INFO (2005 or 2905) and [SOFT (2004 or 2904) or COMP (2004 or 2904)]. N May not be counted with SOFT 3801 or COMP (3008 or 3908).	Semester 1
SOFT 3801	Object-Oriented Software Design (Adv)	4	P SOFT (2001 or 2901) and INFO (2000 or 2900) and INFO (2005 or 2905) and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and Distinction in a SOFT or INFO unit at 2000-level or above. N May not be counted with SOFT 3101 or COMP (3008 or 3908).	Semester 1
SOFT 3102	User Interface Design and Programming	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] N SOFT 3802 or COMP (3102 or 3802).	Semester 1
SOFT 3802	User Interface Design Programming (Adv)	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and Distinction in a SOFT or INFO unit at 2000-level or above. N SOFT 3102 or COMP (3102 or 3802).	Semester 1
SOFT 3103	Software Validation and Verification	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and MATH (1005 or 1905) N May not be counted with SOFT 3803	Semester 2
SOFT 3803	Software Validation & Verification (Adv)	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and MATH (1005 or 1905) and Distinction in a SOFT or INFO unit at 2000-level or above. N May not be counted with SOFT 3103.	Semester 2
SOFT 3104	Software Development Methods 2	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) N May not be counted with SOFT 3804 or COMP (3100 or 3800).	Semester 1
SOFT 3804	Software Development Methods 2 (Adv)	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and Distinction in a SOFT or INFO unit at 2000-level or above. N May not be counted with SOFT 3104 or COMP (3100 or 3800).	Semester 1
SOFT 3200	Software Development Project	8	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and 8 credit points from BIT table III(ii) and 8 credit points from BIT table III(iv) N May not be counted with SOFT 3700.	Semester 1, Semester 2

3. Undergraduate tables and units of study

SOFT 3700	Software Development Project (Advanced)	8	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and 8 credit points from BIT table III(ii) and 8 credit points from BIT table III(iv) and Distinction in a 2000- or 3000- level unit from COMP, INFO, MULT, NETS, or SOFT. N May not be counted with SOFT 3200.	Semester 1, Semester 2
Financial Mathematics and Statistics				
For a major in Financial Mathematics and Statistics, students are required to complete:				
Core 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).				
NOTE: In addition, INFO (2005 or 2905), MATH (2061 or 2961), MATH (2063 or 2963) and MATH (2065 or 2965) are highly recommended as from 2006 they will become prerequisites for some Senior electives.				
Senior units of study				
At least 24 credit points comprising the following units of study:				
(i) MATH (3015 or 3933);				
(ii) STAT (3002 or 3902) and STAT (3003 or 3903) and STAT (3005 or 3905); and				
(iii) two of the following units of study: INFO (3005 or 3905), MATH (3016 or 3916), MATH (3018 or 3921), MATH 3010, STAT (3001 or 3901), STAT (3004 or 3904), STAT 3006.				
Geography				
For a major in Geography, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.				
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 GEOG1001 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 2321	Fluvial and Groundwater Geomorphology	6	P GEOG(2311 or 2001) or 36 credit points of Junior study including GEOG1001 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 ENVI1001, 12 credit points of Chemistry, 6 credit points of Biology, BIOM1002. N GEOG (2002 or 2302 or 2303) or MARS2002	Semester 2
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) N GEOG2101	Semester 1
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 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 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				

3. Undergraduate tables and units of study

GEOG 3002	Environmental Geomorphology	12	P GEOG (2001 or 2002 or 2101 or 2302 or 2303) NB: From 2006 the prerequisites will be: 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography Units of Study.	Semester 2
GEOG 3101	Catchment Management	12	P GEOG (2001 or 2002 or 2101 or 2302 or 2303) and GEOG (2102 or 2201 or 2202) NB: From 2006 the prerequisites will be: 24 credit points of Intermediate Units of Study including 6 credit points of Intermediate Geography Units of Study.	Semester 1
GEOG 3201	Asia-Pacific Field School	12	P GEOG (2101 or 2102 or 2201 or 2202) NB: From 2006 the prerequisites will be: 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study.	S1 Intensive
GEOG 3511	Spatial Change in Australian Society	6	P 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. N GEOG 3202	Semester 1
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 GEOG3202	Semester 2
GEOG 3522	Globalisation and Regions in Transition	6	P 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. N GEOG3203	Semester 2
MARS 3003	Coastal Depositional Environments	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study. NB: From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study	Semester 1a
MARS 3004	Coastal Morphodynamics	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study. NB: From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study	Semester 1b
MARS 3103	GIS Simulation Modelling	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study.	Semester 2a
MARS 3104	Coastal Zone Management	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study.	Semester 2b
Geology				
For a major in Geology, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.				
Junior units of study				
GEOL 1001	Earth and its Environment	6	A No previous knowledge of Geology assumed N GEOL1501	Semester 1
GEOL 1002	Earth Processes and Resources	6	A No previous knowledge of Geology assumed N GEOL1501	Semester 2

3. Undergraduate tables and units of study

GEOL 1902	Earth Materials and Resources (Advanced)	6	A No previous knowledge of Geology assumed N GEOL1002 NB: Department permission required for enrolment. Departmental permission is required for enrolment; a UAI above 93 or a Distinction in GEOL1001 is normally required for admission. This requirement may be varied and students should consult the unit of study coordinator.	Semester 2
Intermediate units of study				
GEOL 2111	Volcanic Hazards and Solutions	6	P GEOL1002 or ENV11001 or by special permission if the student has completed (the HSC course in Earth and Environmental Science 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 ENV11001 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.	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 or 1501) and 18 credit points of Engineering or Science units of study N GEOL (2202 or 2002 or 2005)	Semester 2
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.	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	Structural Geology: The Dynamic Crust	6	P GEOL2002 or CIVL2409 N GEOL3101 NB: From 2006 the prerequisites will be: GEOL (2002 or 2123) or CIVL2409	Semester 1a
GEOS 3004	Geophysics, Imaging, Oil/Ore Production	6	P 16 credit points of Intermediate Science units of study or CIVL2409 N GEOP3202	Semester 2
GEOS 3005	Regolith-Sediment Geochemistry	6	P 16 credit points of Intermediate Science units of study or CIVL2409 NB: Department permission required for enrolment.	Semester 1, Semester 2
GEOS 3006	Mineral Deposits & Spatial Data Analysis	6	P 16 credit points of Intermediate Science units of study or CIVL2409 N GEOL3103	Semester 2b
GEOS 3007	Remote Sensing: Imaging the Earth	6	P 16 credit points of Intermediate Science units of study or CIVL2409 N GEOL3101	Semester 1b
GEOS 3008	Field Geology and Geophysics	6	P GEOL2002 N GEOL3103, GEOS3908 NB: From 2006 the prerequisites will be: GEOL (2002 or 2123) or CIVL2409	Semester 2a

3. Undergraduate tables and units of study

GEOS 3904	Geophysics, Imaging, Oil/Ore Prod (Adv)	6	P 24 credit points of Intermediate Science Units, or GEOL2923 or CIVL2409 N GEOL3004 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.	Semester 2a
GEOS 3906	Mineral Deposits & Spatial Data Advanced	6	P GEOL (2002 or 2123 or 2923) or CIVL2409 N GEOS3006 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.	Semester 2b
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 N GEOL3101 or GEOS3007	Semester 1b
GEOS 3908	Field Geology and Geophysics (Advanced)	6	P GEOL (2002 or 2123 or 2923) or CIVL2409 N GEOS3008 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.	S2 Intensive
MARS 3005	Marine Geophysical Data Analysis	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1a
MARS 3006	Dynamics of Ocean Basins and Margins	6	A Prior completion of MARS3005 is highly recommended P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1b
MARS 3008	Energy: Science, Engineering & Economics	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1
MARS 3105	Coastal Oceanography & Sediment Dynamics	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 N GEOL3104 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 2a
MARS 3106	Physical Marine Habitat	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 2b

3. Undergraduate tables and units of study

Geophysics				
For a major in Geophysics, the minimum requirement is 24 credit points from Senior units of study listed in this subject area.				
Senior units of study				
GEOS 3003	Structural Geology: The Dynamic Crust	6	P GEOL2002 or CIVL2409 N GEOL3101 NB: From 2006 the prerequisites will be: GEOL (2002 or 2123) or CIVL2409	Semester 1a
GEOS 3004	Geophysics, Imaging, Oil/Ore Production	6	P 16 credit points of Intermediate Science units of study or CIVL2409 N GEOP3202	Semester 2
GEOS 3904	Geophysics, Imaging, Oil/Ore Prod (Adv)	6	P 24 credit points of Intermediate Science Units, or GEOL2923 or CIVL2409 N GEOL3004 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.	Semester 2a
GEOS 3006	Mineral Deposits & Spatial Data Analysis	6	P 16 credit points of Intermediate Science units of study or CIVL2409 N GEOL3103	Semester 2b
GEOS 3906	Mineral Deposits & Spatial Data Advanced	6	P GEOL (2002 or 2123 or 2923) or CIVL2409 N GEOS3006 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.	Semester 2b
GEOS 3007	Remote Sensing: Imaging the Earth	6	P 16 credit points of Intermediate Science units of study or CIVL2409 N GEOL3101	Semester 1b
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 N GEOL3101 or GEOS3007	Semester 1b
GEOS 3008	Field Geology and Geophysics	6	P GEOL2002 N GEOL3103, GEOS3908 NB: From 2006 the prerequisites will be: GEOL (2002 or 2123) or CIVL2409	Semester 2a
GEOS 3908	Field Geology and Geophysics (Advanced)	6	P GEOL (2002 or 2123 or 2923) or CIVL2409 N GEOS3008 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.	S2 Intensive
MARS 3005	Marine Geophysical Data Analysis	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1a
MARS 3006	Dynamics of Ocean Basins and Margins	6	A Prior completion of MARS3005 is highly recommended P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1b

3. Undergraduate tables and units of study

MARS 3008	Energy: Science, Engineering & Economics	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1
MARS 3105	Coastal Oceanography & Sediment Dynamics	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 N GEOL3104 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 2a
MARS 3106	Physical Marine Habitat	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 2b
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	NB: This Junior unit of study is highly recommended to Intermediate and Senior Life Sciences students.	Semester 1
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
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 HPSC (2001 and 2002) or (Credit or better in HPSC (2001 or 2002) and at least 24 credit points of Intermediate or Senior units of study). NB: From 2006 the prerequisites will be: 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 2

3. Undergraduate tables and units of study

HPSC 3015	History and Philosophy of Physics	6	A HPSC (2100 and 2101) or HPSC (2001 and 2002) P HPSC (2001 and 2002) or (Credit or better in HPSC (2001 or 2002) and at least 24 credit points of Intermediate or Senior units of study). N HPSC3001, HPSC3106 NB: From 2006 the prerequisites will be: 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 3016	Mathematical Sciences: HPS	6	A HPSC (2100 and 2101) or HPSC (2001 and 2002) P HPSC (2001 and 2002) or (Credit or better in HPSC (2001 or 2002) and at least 24 credit points of Intermediate or Senior units of study). N HPSC (3001 or 3106) NB: From 2006 the prerequisites will be: 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 2
HPSC 3021	Philosophy and Sociology of Biology	6	A HPSC (2100 and 2101) or HPSC (2001 and 2002) P HPSC (2001 and 2002) or (Credit or better in HPSC (2001 or 2002) and at least 24 credit points of Intermediate or Senior units of study). N HPSC3103 NB: From 2006 the prerequisites will be: 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 2
HPSC 3022	Science and Society	6	A HPSC (2100 and 2101) or HPSC (2001 and 2002) P (HPSC2001 and HPSC2002) or (a Credit or better in either HPSC2001 or HPSC2002 and at least 24 credit points of Intermediate or Senior units of study). N HPSC3003 NB: This unit is a requirement for HPS majors. From 2006 the prerequisites will be: 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 3023	History of the Human Sciences	6	A HPSC (2001 and 2002) or HPSC (2100 and 2101) P (HPSC2001 and HPSC2002) or (a Credit or better in either HPSC2001 or HPSC2002 and at least 24 credit points of Intermediate or Senior units of study). N HPSC3010 NB: From 2006 the prerequisites will be: 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 3024	Science and Ethics	6	P At least 24 credit points of Intermediate or Senior units of study N HPSC3007	Semester 1
HPSC 3102	History of the Biomedical Sciences	12	P HPSC (2001 and 2002). NB: Available to Bachelor of Medical Science students only. From 2006 the prerequisites will be: 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, Semester 2

Immunobiology

For a major in Immunobiology, the minimum requirement is 24 credit points comprising:

(i) IMMU 3002; and

(ii) a minimum of 12 credit points from the following Senior elective units of study: BCHM (3001 or 3901), BCHM (3002 or 3902), BIOL (3018 or 3918), BIOL (3026 or 3926), BIOL (3027 or 3927), MICR (3001 or 3901), PHSI (3004 or 3904), CPAT 3101.

Intermediate units of study

The completion of MBLG (2001 or 2101 or 2901) is highly recommended.

3. Undergraduate tables and units of study

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 or BMED2506 NB: This is a prerequisite unit of study for IMMU3002. The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 1
Senior Core unit of study				
IMMU 3002	Immunology	12	A Intermediate Biochemistry and Molecular Biology and Genetics. P IMMU2001 or IMMU2101 and 6 credit points of Intermediate units of study from Biochemistry or Biology or Microbiology or Molecular Biology and Genetics or Pharmacology or Physiology N BMED3003. NB: The completion of 6 credit points of MBLG units of study is highly 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 INFO1000, INFS1000, ISYS1003	Semester 1, Semester 2
ISYS 1003	Foundations of Information Technology	6	N May not be counted with INFO 1000 or INFS1000	Summer
Intermediate units of study				
INFO 2000	Systems Analysis and Design	4	P ISYS 1003 or INFO 1000 or INFS 1000 or 6 credit points of Computational Science or SOFT (1001 or 1901) or COMP (1001 or 1901) N May not be counted with INFO 2900	Summer
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO1000 level P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC N INFO (2000 or 2810 or 2900)	Semester 1
INFO 2810	Systems Analysis and Modelling (Adv)	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 level P ISYS1003 or INFS1000 or INFO1000 or INFO1003 or SOFT (1001 or 1901) or COMP (1001 or 1901) or 6 crpts of COSC; and Distinction in one of these or in a 2000-level or above INFO, ISYS or SOFT unit. N INFO (2000 or 2110 or 2900)	Semester 1
INFO 2120	Database Systems 1	6	A Basics of data modeling, experience working with information technology tools P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC 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 ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC; Distinction in one of these or in a 2000-level or above unit in INFO, ISYS or SOFT. 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) P ISYS1003 or INFO1000 or INFO1003 or INFS1000 N ISYS (2006 or 2007)	Semester 1
Senior units of study				

3. Undergraduate tables and units of study

INFO 3005	Organisational Database Systems	4	P INFO (2000 or 2900) and INFO (2005 or 2905) N INFO 3905 or COMP (3005 or 3905)	Semester 1
INFO 3905	Organisational Database Systems (Adv)	4	P INFO (2000 or 2900) and INFO (2005 or 2905) and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above N COMP (3005 or 3905) or INFO 3005	Semester 1
ISYS 3000	Information Systems Management	4	P INFO2007 or ISYS2007 or ISYS2140	Semester 2
ISYS 3012	Project Management and Practice	4	P INFO (2000 or 2900)	Semester 1
ISYS 3015	Analytical Methods for IS Professionals	4	P [ARIN 1000 or ENGL (1050 or 1005 or 1000) or LNGS (1001 or 1002 or 1005) or ECOF (1001 or 1002)] and 16 credit points of intermediate or senior units of study, including ISYS 2006 and (ISYS 2007 or INFO 2007) and INFO (2000 or 2900) NB: Enrolment Restriction: Entry is restricted to students who have a credit or better in at least one of the Prerequisite units.	Semester 1
ISYS 3113	Arts Informatics Systems	4	P INFO (2000 or 2900) and INFO (2005 or 2905) and [(ARIN 1000 or ENGL (1050 or 1005 or 1000) or LNGS (1001 or 1002 or 1005) or ECOF (1001 or 1002)]	Semester 1
ISYS 3207	Information Systems Project	8	P ISYS 3012 and (ISYS 3015 or ARIN 2000)	Semester 2
Marine Science				
For a major in Marine Science, the minimum requirement is 24 credit points from the following:				
(i) BIOL (3011 or 3911), BIOL (3013 or 3913); and				
(ii) Senior MARS units of study.				
Note that there are Intermediate prerequisites for the required Senior units of study. Junior and Intermediate units of study should be selected to permit progression to the required Senior units of study.				
Core 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 prerequisites.	Semester 1
MARS 2905	Global Oceans (Introduction) (Advanced)	6	P 24 credit points of Junior Science units. N May not be counted with MARS2005. 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 May not be counted with MARS2006. NB: This unit of study is available to advanced students only.	Semester 2
Senior units of study				
MARS 3003	Coastal Depositional Environments	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study. NB: From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study	Semester 1a

3. Undergraduate tables and units of study

MARS 3004	Coastal Morphodynamics	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study. NB: From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study	Semester 1b
MARS 3005	Marine Geophysical Data Analysis	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1a
MARS 3006	Dynamics of Ocean Basins and Margins	6	A Prior completion of MARS3005 is highly recommended P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1b
MARS 3008	Energy: Science, Engineering & Economics	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1
MARS 3103	GIS Simulation Modelling	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study.	Semester 2a
MARS 3104	Coastal Zone Management	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study.	Semester 2b
MARS 3105	Coastal Oceanography & Sediment Dynamics	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 N GEOL3104 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 2a
MARS 3106	Physical Marine Habitat	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 2b

3. Undergraduate tables and units of study

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 (1001 or 1901 or 1906).	Semester 1
MATH 1012	Life Sciences Algebra	3	A HSC Mathematics N MATH (1002 or 1902).	Semester 2
MATH 1013	Differential and Difference Equations	3	A HSC Mathematics 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.	Summer, Semester 1
MATH 1001	Differential Calculus	3	A HSC Mathematics Extension 1 N MATH 1011 or 1901 or 1906.	Summer, Semester 1
MATH 1002	Linear Algebra	3	A HSC Mathematics Extension 1 N MATH 1902 or 1012	Semester 1, Summer
MATH 1003	Integral Calculus and Modelling	3	A HSC Mathematics Extension 2 or MATH 1001 N MATH 1013 or 1903 or 1907	Summer, Semester 2
MATH 1004	Discrete Mathematics	3	A HSC Mathematics Extension 1 N MATH 1904 or MATH2011	Summer, 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)	Summer, Semester 2
MATH 1901	Differential Calculus (Advanced)	3	A HSC Mathematics Extension 2 N MATH (1011 or 1001 or 1906)	Semester 1
MATH 1902	Linear Algebra (Advanced)	3	A HSC Mathematics Extension 2 N MATH (1002 or 1012)	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 or result in Band E4 of HSC Mathematics Extension 1 N MATH1004 or MATH2011	Semester 2
MATH 1905	Statistics (Advanced)	3	A HSC Mathematics Extension 2 or result in Band E4 or better of HSC Mathematics Extension 1 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 (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 2001	Vector Calculus and Complex Variables	4	P MATH (1001 or 1901 or 1906) and (1002 or 1902) and (1003 or 1903 or 1907) N MATH 2901.	Summer
MATH 2002	Matrix Applications	4	P MATH (1002 or 1902) or Distinction in MATH 1012 N MATH 2902	Summer
MATH 2005	Fourier Series & Differential Equations	4	P MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) N MATH 2905	Summer
MATH 2009	Graph Theory	4	P 6 credit points of Junior Mathematics (at the Distinction level in Life Sciences units)	Summer
MATH 2011	Topics in Discrete Mathematics	4	A HSC Mathematics Extension 1. P 6 credit points of Junior Mathematics. N MATH (1004 or 1904).	Summer
MATH 2061	Linear Mathematics and Vector Calculus	6	P MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) N MATH (2001 or 2901 or 2002 or 2902 or 2961 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

3. Undergraduate tables and units of study

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 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 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	Semester 2
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 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 (MATH1902 or Credit in MATH1002) N MATH (2908 or 2918 or 2008)	Semester 2
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 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)	Semester 2
Senior units of study				
MATH 3001	Topology	4	P 8 credit points of Intermediate Mathematics N MATH 3901	Semester 1
MATH 3002	Rings and Fields	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2008 or 2908) N MATH 3902	Semester 1
MATH 3003	Ordinary Differential Equations	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2001 or 2901) N MATH3923	Semester 1
MATH 3005	Logic	4	P (for all but BCST students) 8 credit points of Intermediate Mathematics; (for BCST students) 8 credit points of Intermediate Mathematics or 12 credit points of Junior Mathematics at Advanced level	Semester 1
MATH 3006	Geometry	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 1902 or 1002)	Semester 2
MATH 3007	Coding Theory	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902)	Semester 2
MATH 3008	Real Variables	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2007 or 2901 or 2907)	Semester 2
MATH 3009	Number Theory	4	P 8 credit points of Intermediate Mathematics	Semester 2

3. Undergraduate tables and units of study

MATH 3010	Information Theory	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901 and some probability theory)	Semester 2
MATH 3015	Financial Mathematics 2	4	P 8 credit points of Intermediate Mathematics including MATH 2033 or 2933 (and strongly advise MATH 2010 and STAT (2001 or 2901)). N MATH 3933.	Semester 2
MATH 3016	Mathematical Computing I	4	P 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903 or 1906 or 1907. N May not be counted with MATH 3916.	Semester 1
MATH 3018	Partial Differential Equations and Waves	4	P MATH (2001 or 2901) and MATH (2005 or 2905) N May not be counted with MATH 3921	Semester 1
MATH 3019	Signal Processing	4	P MATH (2001 or 2901) and MATH (2005 or 2905) N May not be counted with MATH 3919	Semester 1
MATH 3020	Nonlinear Systems and Biomathematics	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2006 or 2906 or 2908 or 3003) and one of MATH (1001 or 1003 or 1901 or 1903). N MATH 3920	Semester 2
MATH 3901	Metric Spaces (Advanced)	4	P 12 credit points of Intermediate Mathematics (strongly advise MATH 2907) N MATH 3001	Semester 1
MATH 3902	Algebra I (Advanced)	4	P 12 credit points of Intermediate Mathematics (strongly advise MATH 2902) N MATH 3002	Semester 1
MATH 3903	Differential Geometry (Advanced)	4	P 12 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901, with MATH 3001 or 3901)	Semester 1
MATH 3904	Complex Variable (Advanced)	4	P 12 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901, with MATH 3001 or 3901)	Semester 1
MATH 3906	Group Representation Theory (Advanced)	4	P 12 credit points of Intermediate Mathematics (strongly advise MATH 3902) NB: This unit is only offered in odd years.	Semester 2
MATH 3907	Algebra II (Advanced)	4	P MATH3902 or Credit in MATH3002, and 12 credit points of Intermediate Mathematics. NB: Department permission required for enrolment. This unit of study is only offered in even years.	Semester 2
MATH 3908	Nonlinear Analysis (Advanced)	4	P 12 credit points of Intermediate Mathematics (strongly advise MATH 3901)	Semester 2
MATH 3909	Lebesgue Int and Fourier Analysis (Adv)	4	P 12 credit points of Intermediate Mathematics (strongly advise MATH 2907 and MATH 3901)	Semester 2
MATH 3914	Fluid Dynamics (Advanced)	4	P MATH (2901 or credit in 2001) and MATH (2905 or credit in 2005)	Semester 1
MATH 3915	Mathematical Methods (Advanced)	4	P MATH (2901 or 2905 or 2907 or 3921) or Credit in MATH (2005 or 3018).	Semester 2
MATH 3916	Mathematical Computing I (Advanced)	4	P 8 credit points of Intermediate Mathematics and one of MATH 1903 or 1907 or Credit in MATH 1003 N May not be counted with MATH 3016	Semester 1
MATH 3917	Hamiltonian Dynamics (Advanced)	4	P MATH 2904 or Credit in MATH 2004	Semester 2
MATH 3919	Signal Processing (Advanced)	4	P MATH 2905 or Credit in MATH 2005 N May not be counted with MATH 3019	Semester 1
MATH 3920	Nonlinear Systems & Biomathematics (Adv)	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2908 or 3003) and one of MATH 1903 and 1905 or 1903 and 1904 or Credit in (MATH 1003 and 1005) or MATH (1003 and 1004) N MATH 3020	Semester 2
MATH 3921	P D E and Waves (Advanced)	4	P MATH (2901 or credit in 2001) and (2905 or credit in 2005) N May not be counted with MATH 3018	Semester 1

3. Undergraduate tables and units of study

MATH 3923	Ordinary Differential Equations (Adv)	4	A MATH2901 and MATH2902 P 12 credit points of intermediate mathematics N MATH3003	Semester 1
MATH 3925	Public Key Cryptography (Advanced)	4	P 12 credit points from Intermediate or senior mathematics. Strongly recommend MATH 3902.	Semester 2
MATH 3933	Financial Mathematics 2 (Advanced)	4	P 8 credit points of Intermediate Mathematics including MATH 2933 or Credit in MATH2033 (and strongly advise MATH 2010 and STAT (2001 or 2901)). N MATH 3015.	Semester 2
Medicinal Chemistry				
For a major in Medicinal Chemistry, the minimum requirement is 24 credit points comprising:				
(i) PCOL (3001 or 3901); 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 (2001 or 2101 or 2901) 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 2011 or 2909) NB: For progression on to Senior Microbiology units, students must also complete MBLG1001 and MICR (2022 or 2922)	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 MBLG1001 N MICR (2021 or 2024 or 2001 or 2901 or 2003 or 2011 or 2909) NB: For progression on to Senior Microbiology units, students must also complete MBLG1001 and MICR (2022 or 2922)	Semester 1
MICR 2022	Applied Microbiology	6	P MICR (2021 or 2921 or 2001 or 2901) except for students taking MICR2024 N MICR (2922 or 2002 or 2902 or 2004 or 2012 or 2909) NB: For progression on to Senior Microbiology units, students must also complete MBLG1001	Semester 2
MICR 2922	Applied Microbiology (Advanced)	6	P Distinction in MICR (2021 or 2921 or 2001 or 2901 or 2024) N MICR (2022 or 2002 or 2902 or 2004 or 2012 or 2909) NB: For progression on to Senior Microbiology units, students must also complete MBLG1001	Semester 2
MICR 2024	Microbes in the Environment	6	P 30 credit points of junior Science or Faculty of Food, Agriculture and Natural Resource units including 6 credit points of Junior Biology. N MICR (2021 or 2921 or 2001 or 2901 or 2003 or 2011 or 2909). NB: For progression on to Senior Microbiology units, students must also complete MBLG1001 and MICR2022.	Semester 2
Senior units of study				
MICR 3001	General and Medical Microbiology	12	P MBLG (2001 or 2101 or 2901) and [12 credit points of Intermediate MICR units or MICR (2011 and 2012) or MICR 2909]. For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2506. N MICR3901. NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) and MBLG (1001 or 2001 or 2901 or 2771 or 2871).	Semester 1

3. Undergraduate tables and units of study

MICR 3901	General and Medical Microbiology (Adv)	12	P MBLG (2101 or 2001 or 2901) and [12 credit point of Intermediate MICR units including one Distinction, or MICR (2011 and 2012) including one Distinction, or Distinction in MICR 2909. For BMedSc: 32 credit points of Intermediate BMED units including Distinction in BMED 2506. N MICR 3001. NB: From 2006 the prerequisites will be: MICR (2021 or 2921 or 2001 or 2901 or 2024) and MICR (2022 or 2922 or 2002 or 2902), including 6 credit points at Distinction level and MBLG (1001 or 2001 or 2901 or 2771 or 2871).	Semester 1
MICR 3002	Molecular/Environmental Microbiology	12	P 12 credit points of Intermediate Microbiology and MBLG (2101 or 2001 or 2901). N MICR (3902 or 3004 or 3904) NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) and MBLG (1001 or 2001 or 2901 or 2771 or 2871).	Semester 2
MICR 3902	Molecular/Environmental Microbiology Adv	12	P 12 credit points of Intermediate Microbiology including one Distinction, and MBLG (2101 or 2001 or 2901). N MICR (3002 or 3004 or 3904) NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) at Distinction level and MBLG (1001 or 2001 or 2901 or 2771 or 2871).	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)	Semester 2
Intermediate units of study				
MBLG 2001	Molecular Biology and Genetics A	8	P 12 credit points of Junior Chemistry and BIOL (1001 or 1101 or 1901) except for students co-enrolled in BCHM 2011, or with permission of the Unit Co-ordinator. For Combined BAppSc(Exercise and Sport Science)/BSc(Nutrition) degree the completion of all Junior units listed in Table IF N AGCH 2001 or BCHM (2001 or 2101 or 2901) or MBLG (1001 or 2771 or 2871 or 2101 or 2901)	Summer
MBLG 2101	Molecular Biology & Genetics A (Theory)	4	P 12 credit points of Junior Chemistry and BIOL (1001 or 1101 or 1901). N AGCH 2001 or BCHM (2001 or 2101 or 2901) or MBLG (2001 or 2901).	Summer
MBLG 2771	Molecular Biology and Genetics A	6	P BIOL (1001 or 1101 or 1901) except for students co-enrolled in BCHM 2071/2971 and 12 credit points of Junior Chemistry. For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree the completion of all Junior units listed in Table IF N MBLG (1001, 2871, 2071, 2971, 2001, 2101, 2901, 2111)	Semester 1
MBLG 2871	Molecular Biology and Genetics A (Adv)	6	P BIOL (1001,1101 or 1901) except for students co-enrolled in BCHM 2071/2971 and 12 credit points of Junior Chemistry. For Combined BAppSc(Exercise and Sport Science)/BSc(Nutrition) degree the completion of all Junior units listed in Table IF. Also required is a Distinction or better in two of the prerequisite units of study. N MBLG (1001 or 2771 or 2071 or 2971 or 2001 or 2101 or 2901 or 2111) NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 1

3. Undergraduate tables and units of study

MBLG 2072	Molecular Biology and Genetics B	6	A One of MBLG2771, MBLG2001, MBLG2871, MBLG2901 P 12 credit points of Junior Chemistry and BIOL (1001 or 1101 or 1901) N MBLG2972, MBLG2102, MBLG2002, MBLG2902	Semester 2
MBLG 2972	Molecular Biology and Genetics B (Adv)	6	P Distinction in one of MBLG2771, MBLG2001, MBLG2871, MBLG2901. N MBLG (2072, 2102, 2002, 2902), BIOL (2005, 2105, 2905)	Semester 2
Nanoscience and Technology				
For a major in Nanoscience and Technology, the minimum requirement is 24 credit points from at least two of the following subject areas:				
(i) Senior Chemistry.				
(ii) Senior Physics (not including PHYS 3022/3922 or 3013/3913 or 3023/3923 or 3600).				
(iii) MECH 3361, MECH 3362, MECH 4310.				
Note that there are Intermediate prerequisites for the required Senior units of study. Junior and Intermediate units of study should be selected to permit progression to the Senior units of study.				
Senior elective units of study				
MECH 3361	Mechanics of Solids 2	6	A MATH1001, MATH1002, MATH1003, ENGG1802 P AMME2301 or AERO2300; MATH2061 or MATH2005	Semester 1
MECH 3362	Materials 2	6	P (AMME 2302 or MECH2300) and (AMME 2301 or AERO2300)	Semester 2
MECH 4310	Advanced Engineering Materials	6	P MECH3300 Materials 2. N MECH4315 Advanced Aerospace Materials.	Semester 2
Neuroscience				
For a major in Neuroscience, students are required to complete:				
Junior units of study				
(i) 12 credit points of Junior units of study from the Science Subject Area of Mathematics; and				
(ii) 24 credit points from Junior units of study from the Science Subject Areas of Biology, Chemistry, Computer Science, Physics or Psychology and MBLG 1001.				
(NOTE: MBLG 1001 is strongly recommended for students starting from 2005 onward.)				
Intermediate elective units of study				
At least 24 credit points from the following units of study (ANAT 2010 is particularly recommended):				
(i) ANAT 2010, MBLG 2771 (or MBLG 2001/2101 - offered in Summer School 2005 only), MBLG 2871, PCOL 2011, PCOL 2012, PHSI 2005, PHSI 2905, PHSI 2006, PHSI 2906, PSYC 2011, PSYC 2012, PSYC 2013, PSYC 2014.				
NOTE: From 2006, at least 30 credit points from the above list of units of study will be required.				
Senior elective units of study				
At least 28 credit points from the following units of study:				
PCOL (3002 or 3902), PHSI (3001 or 3901), PHSI (3002 or 3902), PSYC 3203, PSYC 3204, PSYC 3209, PSYC 3210, PSYC 3215.				
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	A PCOL2011 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 3001	Molecular Pharmacology and Toxicology	12	P PCOL 2001 and PCOL (2002 or 2003); or 32 credit points from Intermediate BMED units of study. N PCOL 3901. NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 1
PCOL 3002	Neuro- and Cardiovascular Pharmacology	12	P PCOL 2001 and PCOL (2002 or 2003); or 32 credit points from Intermediate BMED units of study. N PCOL 3902. NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 2

3. Undergraduate tables and units of study

PCOL 3901	Molecular Pharmacology & Toxicology Adv	12	P Distinction average in PCOL 2001 and PCOL (2002 or 2003); or in 32 credit points from Intermediate BMED units of study. N PCOL 3001. NB: Department permission required for enrolment. The completion of 6 credit points of MBLG units of study is highly recommended. Entry to this unit requires Departmental permission.	Semester 1
PCOL 3902	Neuro & Cardiovascular Pharmacology Adv	12	P Distinction average in PCOL2001 and PCOL (2002 or 2003); or in 32 credit points from Intermediate BMED units of study. N PCOL 3002. NB: Department permission required for enrolment. The completion of 6 credit points of MBLG units of study is highly recommended. Entry to this unit requires Departmental permission.	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 PHYS 3011/3911, at least 8 credit points from other lecture-based units, and at least 8 credit points chosen from laboratory-based and project-based units.				
Junior units of study				
PHYS 1001	Physics 1 (Regular)	6	A HSC Physics C Recommended: MATH (1001/1901, 1002/1902, 1003/1903, 1005/1905) N PHYS (1002 or 1901)	Semester 1
PHYS 1002	Physics 1 (Fundamentals)	6	A No assumed knowledge of Physics C Recommended: MATH (1001/1901, 1002/1902, 1003/1903, 1005/1905) N PHYS (1001 or 1901)	Semester 1
PHYS 1003	Physics 1 (Technological)	6	A HSC Physics or PHYS (1001 or 1002 or 1901) or equivalent. C Recommended: MATH (1001/1901, 1002/1902, 1003/1903). MATH 1005/1905 would also be useful. N PHYS (1004 or 1902)	Semester 2
PHYS 1004	Physics 1 (Environmental & Life Science)	6	A HSC Physics or PHYS (1001 or 1002 or 1901) or equivalent. C Recommended: MATH (1001/1901, 1002/1902, 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 1901	Physics 1A (Advanced)	6	P UAI of at least 96, or HSC Physics result in Band 6, or PHYS1902, or Distinction or better in PHYS (1003 or 1004) or an equivalent unit. C Recommended: MATH (1001/1901, 1002/1902, 1003/1903). MATH 1005/1905 would also be useful. N PHYS (1001 or 1002)	Semester 1
PHYS 1902	Physics 1B (Advanced)	6	P UAI of at least 96, or HSC Physics result in Band 6, or PHYS1901, or Distinction or better in PHYS (1001 or 1002) or an equivalent unit. C Recommended: MATH (1001/1901, 1002/1902, 1003/1903). MATH 1005/1905 would also be useful. N PHYS (1003 or 1004)	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)	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 2911 or 2111) N PHYS (2102 or 2104 or 2902 or 2002 or 2912)	Semester 2

3. Undergraduate tables and units of study

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 2001 or 2901 or 2011 or 2911) C PHYS (2012 or 2912) N PHYS (2001 or 2901 or 2913 or 2101 or 2103)	Semester 2
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)	Semester 1
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)	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 2001 or 2901 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 3011	Electromagnetism/Quantum Mechanics	4	P 16 credit points of Intermediate Physics and 8 credit points of Intermediate Mathematics. N PHYS (3003, 3014, 3015, 3200, 3903, 3911, 3914, 3915)	Semester 1
PHYS 3012	Condensed Matter Physics/Optics	4	A 8 credit points of Intermediate Mathematics. P 16 credit points of Intermediate Physics N PHYS (3004, 3005, 3006, 3107, 3904, 3905, 3906, 3014, 3015, 3912, 3914, 3915)	Semester 1
PHYS 3013	Thermodynamics/Statistical Mechanics	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics N PHYS (3005 or 3014 or 3015 or 3905 or 3913 or 3914 or 3915).	Semester 1
PHYS 3014	Topics in Physics A	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics N PHYS (3003, 3004, 3005, 3011, 3012, 3013, 3015, 3200, 3903, 3904, 3905, 3911, 3912, 3913, 3914, 3915) NB: Department permission required for enrolment. Approval required by the Senior Physics Coordinator prior to enrolment	Semester 1
PHYS 3015	Topics in Physics B	6	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics N PHYS (3003, 3004, 3005, 3011, 3012, 3013, 3014, 3200, 3903, 3904, 3905, 3911, 3912, 3913, 3914, 3915) NB: Department permission required for enrolment.	Semester 1
PHYS 3016	Experimental Physics A	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3008 or 3009 or 3017 or 3101 or 3102 or 3105 or 3107 or 3200 or 3801 or 3908 or 3909 or 3916 or 3917)	Semester 1, Semester 2
PHYS 3017	Experimental Physics B	8	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics N PHYS (3008 or 3009 or 3016 or 3101 or 3102 or 3105 or 3107 or 3200 or 3801 or 3908 or 3909 or 3916 or 3917)	Semester 1, Semester 2

3. Undergraduate tables and units of study

PHYS 3021	Plasma Physics/Nanoscience	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics N PHYS (3005 or 3006 or 3024 or 3025 or 3905 or 3906 or 3921 or 3924 or 3925)	Semester 2
PHYS 3022	Astrophysics/High Energy Physics	4	P 16 credit points of Intermediate Physics and 8 credit points of Intermediate Mathematics. N PHYS (3005 or 3006 or 3024 or 3025 or 3105 or 3905 or 3906 or 3922 or 3924 or 3925)	Semester 2
PHYS 3023	Biological & Medical Physics	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics or Intermediate Biochemistry, 12 credit points of Junior units from Mathematics and Statistics and 12 credit points of Junior Physics. N PHYS (3006 or 3024 or 3025 or 3906 or 3923 or 3924 or 3925)	Semester 2
PHYS 3024	Topics in Physics C	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics N PHYS (3003 or 3004 or 3005 or 3021 or 3022 or 3023 or 3025 or 3200 or 3903 or 3904 or 3905 or 3921 or 3922 or 3923 or 3924 or 3925) NB: Department permission required for enrolment.	Semester 2
PHYS 3025	Topics in Physics D	6	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics N PHYS (3003 or 3004 or 3005 or 3021 or 3022 or 3023 or 3024 or 3200 or 3903 or 3904 or 3905 or 3921 or 3922 or 3923 or 3924 or 3925) NB: Department permission required for enrolment.	Semester 2
PHYS 3026	Experimental Physics C	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3008 or 3009 or 3027 or 3101 or 3102 or 3105 or 3107 or 3200 or 3801 or 3908 or 3909 or 3926 or 3927)	Semester 1, Semester 2
PHYS 3027	Experimental Physics D	8	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3008 or 3009 or 3026 or 3101 or 3102 or 3105 or 3107 or 3200 or 3801 or 3908 or 3909 or 3926 or 3927)	Semester 1, Semester 2
PHYS 3911	Electromagnetism/Quantum Mechanics (Adv)	4	P 16 points of Intermediate Physics with a Credit average and 8 credit points of Intermediate Mathematics. N PHYS (3003 or 3011 or 3014 or 3015 or 3200 or 3903 or 3914 or 3915)	Semester 1
PHYS 3912	Condensed Matter Physics/Optics (Adv)	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3004 or 3005 or 3006 or 3012 or 3014 or 3015 or 3107 or 3904 or 3905 or 3906 or 3914 or 3915)	Semester 1
PHYS 3913	Thermodynamics/Statistical Mechanics Adv	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3005 or 3013 or 3014 or 3015 or 3905 or 3914 or 3915)	Semester 1
PHYS 3914	Topics in Physics A (Adv)	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3003 or 3004 or 3005 or 3011 or 3012 or 3013 or 3014 or 3015 or 3200 or 3903 or 3904 or 3905 or 3911 or 3912 or 3913 or 3915) NB: Department permission required for enrolment.	Semester 1

3. Undergraduate tables and units of study

PHYS 3915	Topics in Physics B (Adv)	6	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3003 or 3004 or 3005 or 3011 or 3012 or 3013 or 3014 or 3015 or 3200 or 3903 or 3904 or 3905 or 3911 or 3912 or 3913 or 3914) NB: Department permission required for enrolment.	Semester 1
PHYS 3916	Experimental Physics A (Adv)	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3008 or 3009 or 3016 or 3017 or 3101 or 3102 or 3105 or 3107 or 3200 or 3801 or 3908 or 3909 or 3917)	Semester 1, Semester 2
PHYS 3917	Experimental Physics B (Adv)	8	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3008 or 3009 or 3016 or 3017 or 3101 or 3102 or 3105 or 3107 or 3200 or 3801 or 3908 or 3909 or 3916)	Semester 1, Semester 2
PHYS 3918	Special Projects A (Adv)	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3103 or 3104 or 3803 or 3804) NB: Department permission required for enrolment. Departmental permission needed.	Semester 1, Semester 2
PHYS 3921	Plasma Physics/Nanoscience (Adv)	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3005 or 3006 or 3021 or 3024 or 3025 or 3905 or 3906 or 3924 or 3925)	Semester 2
PHYS 3922	Astrophysics/High Energy Physics (Adv)	4	P 16 credit points of Intermediate Physics with a Credit average and 8 credit points of Intermediate Mathematics. N PHYS (3005 or 3006 or 3022 or 3024 or 3025 or 3105 or 3905 or 3906 or 3924 or 3925)	Semester 2
PHYS 3923	Biological & Medical Physics (Adv)	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics or Intermediate Biochemistry with a Credit average and 12 credit points of Junior units from Mathematics and Statistics and 12 credit points of Junior Physics. N PHYS (3006 or 3906)	Semester 2
PHYS 3924	Topics in Physics C (Adv)	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3003 or 3004 or 3005 or 3021 or 3022 or 3023 or 3024 or 3025 or 3200 or 3903 or 3904 or 3905 or 3921 or 3922 or 3923 or 3925) NB: Department permission required for enrolment.	Semester 2
PHYS 3925	Topics in Physics D (Adv)	6	P 16 credit points of Intermediate Physics with a Credit average and 8 credit points of Intermediate Mathematics. N PHYS (3003 or 3004 or 3005 or 3021 or 3022 or 3023 or 3024 or 3025 or 3200 or 3903 or 3904 or 3905 or 3921 or 3922 or 3923 or 3924) NB: Department permission required for enrolment.	Semester 2
PHYS 3926	Experimental Physics C (Adv)	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3008 or 3009 or 3026 or 3027 or 3101 or 3102 or 3105 or 3107 or 3200 or 3801 or 3908 or 3909 or 3927)	Semester 1, Semester 2
PHYS 3927	Experimental Physics D (Adv)	8	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3008 or 3009 or 3026 or 3027 or 3101 or 3102 or 3105 or 3107 or 3200 or 3801 or 3908 or 3909 or 3926)	Semester 1, Semester 2

3. Undergraduate tables and units of study

PHYS 3928	Special Projects B (Adv)	4	A 8 credit points of Intermediate Mathematics P 16 credit points of Intermediate Physics. N PHYS (3103 or 3104 or 3803 or 3804 or 3918) NB: Department permission required for enrolment.	Semester 1, Semester 2
COSC 3001	Scientific Computing	4	A Programming experience in MATLAB P 12 credit points chosen from Junior Mathematics and Statistics, 16 credit points of Intermediate units in Science subject areas. N COSC3901, PHYS3301, PHYS3901	Semester 1
COSC 3901	Scientific Computing (Advanced)	4	A Programming experience in MATLAB P 12 credit points chosen from Junior Mathematics and Statistics and 16 credit points of Intermediate units in Science subject areas with a Credit average. N COSC3001, PHYS3301, PHYS3901	Semester 1
COSC 3002	Parallel Computing and Visualisation	4	A Programming experience in C and MATLAB or equivalent P 12 credit points from the Science subject areas of Junior Mathematics and Statistics and 16 credit points of Intermediate units in Science subject areas. N COSC3601, COSC3902, PHYS3303, PHYS3933	Semester 2
COSC 3902	Parallel Computing & Visualisation (Adv)	4	A Programming experience in C and MATLAB or equivalent P 12 credit points from the Science subject areas of Junior Mathematics and Statistics and 16 credit points, average grade Credit, of Intermediate units in Science subject areas. N COSC3601, COSC3902, PHYS3303, PHYS3933	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
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: 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 of MBLG units of study is highly recommended for progression to Senior Physiology	Semester 1

3. Undergraduate tables and units of study

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: 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.	Semester 2
Senior units of study				
PHSI 3001	Neuroscience	12	P For BMedSc: at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: PHSI (2101 or 2001 or 2901) or ANAT 2003; and MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901); plus at least 8 credit points of Intermediate Science units of study. N PHSI 3901 NB: A minimum of 8 credit points of Intermediate Physiology and/or Anatomy is recommended. From 2006 the prerequisites will be: Except for BMedSc students, PHSI (2101 or 2001 or 2901 or 2005 or 2905), ANAT (2003 or 2010), 6 credit points of MBLG plus at least 6 credit points of Intermediate Science units of study. For BMedSc: 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)	Semester 1
PHSI 3901	Neuroscience (Advanced)	12	P For BMedSc: at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: PHSI (2001 or 2101 or 2901) or ANAT 2003; and MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901); plus at least 8 credit points of Intermediate Science units of study. N PHSI 3001 NB: Department permission required for enrolment. Permission required for enrolment. Available to selected students who have achieved a mark of at least 65 in the prerequisite units of study. From 2006 the prerequisites will be: Except for BMedSc students, PHSI (2001 or 2101 or 2901 or 2005 or 2905), ANAT (2003 or 2010), 6 credit points of MBLG plus at least 6 credit points of Intermediate Science units of study. For BMedSc: 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).	Semester 1

3. Undergraduate tables and units of study

PHSI 3002	Neuroscience - Cellular and Integrative	12	P For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. N PHSI 3902 NB: From 2006 the prerequisites will be: Except for BMedSc students, 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics (or for students following the old program: PHSI (2101 or 2001 or 2901 or 2005 or 2905), ANAT (2003 or 2010), 6 credit points of MBLG plus at least 6 credit points of Intermediate Science units of study). For BMedSc: 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).	Semester 2
PHSI 3902	Neuroscience- Cellular & Integrative Adv	12	P For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: Credit or better in PHSI 3001; and 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. N PHSI 3002 NB: Department permission required for enrolment. Permission required for enrolment. Available to selected students who have achieved a mark of at least 65 in the prerequisite units of study. From 2006 the prerequisites will be: Except for BMedSc students, Credit or better in PHSI3001 and 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. From 2006 the prerequisites will be: Except for BMedSc students, PHSI (2101 or 2001 or 2901 or 2005 or 2905), ANAT (2003 or 2010), 6 credit points of MBLG plus at least 6 credit points of Intermediate Science units of study. For BMedSc: 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).	Semester 2

3. Undergraduate tables and units of study

PHSI 3003	Heart and Circulation	12	A PHSI (2001 or 2101 or 2901) and BCHM (2002 or 2102 or 2902). P For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: PHSI (2002 or 2102 or 2902) and MBLG (2001 or 2101 or 2901) plus at least 8 credit points of Intermediate Science units of study. N PHSI 3903 NB: A minimum of 8 credit points of Intermediate Physiology and BCHM (2002 or 2102 or 2902) are strongly recommended. From 2006 the prerequisites will be: For BMedSc: 42 credit points of BMED Intermediate units including BMED (2801, 2802, 2803 & 2806). For others: PHSI (2002 or 2102 or 2902) or {PHSI (2005 or 2905) and PHSI (2006 or 2906)} and 6 credit points of MBLG or BCHM (2001 or 2101 or 2901)	Semester 2
PHSI 3903	Heart and Circulation (Advanced)	12	A PHSI (2001 or 2101 or 2901) and BCHM (2002 or 2102 or 2902). P For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: PHSI (2002 or 2102 or 2902) and MBLG (2001 or 2101 or 2901) plus at least 8 credit points of Intermediate Science units of study. N PHSI 3003 NB: Department permission required for enrolment. Permission required for enrolment. Available to selected students who have achieved a mark of at least 65 in the prerequisite units of study. A minimum of 8 credit points of Intermediate Physiology and BCHM (2002 or 2102 or 2902) are strongly recommended. From 2006 the prerequisites will be: For BMedSc: 42 credit points of BMED Intermediate units including BMED (2801, 2802, 2803 & 2806). For others: PHSI (2002 or 2102 or 2902) or {PHSI (2005 or 2905) and PHSI (2006 or 2906)} and 6 credit points of MBLG or BCHM (2001 or 2101 or 2901)	Semester 2
PHSI 3004	Human Cellular Physiology	12	P For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). For others: PHSI (2001 or 2101 or 2901) and PHSI (2002 or 2102 or 2902) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901). N PHSI 3904 NB: From 2006 the prerequisites will be: PHSI (2001 or 2101 or 2901 or 2005 or 2905), PHSI (2002 or 2102 or 2902 or 2006 or 2906) and MBLG (2001 or 2101 or 1001) or BCHM (2001 or 2101 or 2901). From 2006 the prerequisites will be: Except for BMedSc students, PHSI (2101 or 2001 or 2901 or 2005 or 2905), ANAT (2003 or 2010), 6 credit points of MBLG plus at least 6 credit points of Intermediate Science units of study. For BMedSc: 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).	Semester 1

3. Undergraduate tables and units of study

PHSI 3904	Human Cellular Physiology (Advanced)	12	P For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). For others: PHSI (2001 or 2101 or 2901) and PHSI (2002 or 2102 or 2902) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901) N PHSI3004 NB: Department permission required for enrolment. Permission is required for enrolment. Available to selected students who have achieved an average of at least 65 in the prerequisite units of study. From 2006 the prerequisites will be: PHSI (2001 or 2101 or 2901 or 2005 or 2905), PHSI (2002 or 2102 or 2902 or 2006 or 2906) and MBLG (2001 or 2101 or 1001) or BCHM(2001 or 2101 or 2901). For BMedSc: 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).	Semester 1
Plant Science				
Senior units of study and a major in this subject area will be offered from 2006.				
Intermediate units of study				
PLNT 2001	Applied Plant Biochemistry	6	P 12 credit points of Junior Chemistry and 12 credit points of Junior Biology or in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 N PLNT2901, AGCH2001.	Semester 1
PLNT 2901	Applied Plant Biochemistry (Advanced)	6	P A Distinction average in 12 credit points of Junior Chemistry and 12 credit points of Junior Biology or in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 N PLNT2001, AGCH2001	Semester 1
PLNT 2002	Aust Flora: Ecology and Conservation	6	P 12 credit points of Junior Biology or in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 or BIOL1001 and ENV11001 N PLNT2902, BIOL2004 or BIOL2904.	Semester 1
PLNT 2902	Aust Flora: Ecology & Conservation (Adv)	6	P Distinction average in 12 credit points of Junior Biology or in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 or BIOL1001 and ENV11001 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 in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 or BIOL1001 and ENV11001 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 in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 or BIOL1001 and ENV11001 N PLNT2003, BIOL2003, BIOL2903, CROP2001	Semester 2
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.				
Junior units of study				
PSYC 1001	Psychology 1001	6		Summer, Semester 1
PSYC 1002	Psychology 1002	6		Summer, Semester 2
Intermediate units of study				
PSYC 2011	Brain and Behaviour	6	P PSYC (1001 and 1002). N PSYC2111	Semester 1

3. Undergraduate tables and units of study

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 3201	Statistics and Psychometrics	4	P At least 8 credit points of Intermediate Psychology including PSYC (2112 or 2012)	Semester 2
PSYC 3202	History and Philosophy of Psychology	4	P 12 credit points of Intermediate Psychology.	Semester 1
PSYC 3203	Abnormal Psychology	4	P At least 8 credit points of Intermediate Psychology including PSYC (2111 or 2011) and PSYC (2113 or 2114)	Semester 2
PSYC 3204	Behavioural Neuroscience	4	P At least 8 credit points of Intermediate Psychology including PSYC (2111 or 2011)	Semester 2
PSYC 3205	Cognition, Language and Thought	4	P PSYC (2112 and 2113).	Semester 1
PSYC 3206	Developmental Psychology	4	P 8 credit points of Intermediate Psychology.	Semester 1
PSYC 3209	Learning and Motivation	4	P PSYC (2111 and 2112).	Semester 1
PSYC 3210	Perceptual Systems	4	P PSYC (2111 and 2112).	Semester 1
PSYC 3211	Psychological Assessmt. & Organisational	4	P At least 8 credit points of Intermediate Psychology including PSYC (2112 or 2012) and PSYC 2114 N PSYC3207 (except with permission from the Head of Department)	Semester 2
PSYC 3212	Social Psychology	4	P 8 credit points of Intermediate Psychology including PSYC 2113.	Semester 1
PSYC 3214	Communication and Counselling	4	P At least 8 credit points of Intermediate Psychology including PSYC (2113 or 2013) and PSYC (2114 or 2014)	Semester 2
PSYC 3215	Cognitive Neuroscience & Neuropsychology	4	P At least 8 credit points of Intermediate Psychology including two of PSYC (2111 or 2011), PSYC (2112 or 2012), PSYC (2113 or 2013).	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.				
Intermediate units of study				
SOIL 2003	Soil Science 2	6		Semester 1
SOIL 2004	The Soil Resource	6	P SOIL2001 or GEOL (1002 or 2004) or GEOG1001 or ENVI2001 N GEOG3002	Semester 2
Senior units of study				
SOIL 3001	Environmental Soil Science A	12	P SOIL2001.	Semester 1
SOIL 3002	Environmental Soil Science B	12	P SOIL2001; and AGCH2001 or CHEM (2001 or 2101 or 2202 or 2301 or 2302) or BCHM (2002 or 2902).	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 or 1022)	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 MATH1905 or Credit in MATH1005 N STAT (2004 or 2012 or 1022)	Semester 2
Senior units of study				
STAT 3001	Distribution Theory and Inference	4	P MATH (1003 or 1903 or 1907) and STAT (2003 or 2903) N STAT 3901	Semester 1
STAT 3002	Applied Linear Models	4	P STAT 2004 (or STAT 1022 for Arts students) and MATH (1002 or 1902). N May not be counted with STAT 3902	Semester 1

3. Undergraduate tables and units of study

STAT 3003	Time Series Analysis	4	P STAT (2003 or 2903) N May not be counted with STAT3903	Semester 1
STAT 3004	Design of Experiments	4	A STAT3002 P STAT2004 (or STAT1022 for Arts students) and MATH (1002 or 1902) N STAT3904	Semester 2
STAT 3005	Applied Stochastic Processes	4	P MATH (1003 or 1903 or 1907) and STAT (2001 or 2901) N STAT 3905	Semester 2
STAT 3006	Sampling Theory and Categorical Data	4	P STAT 2003 or 2903	Semester 2
STAT 3901	Statistical Theory (Advanced)	4	P (MATH 2001 or 2901) and STAT 2903 N STAT 3001	Semester 1
STAT 3902	Linear Models (Advanced)	4	P STAT 2004 and (STAT 2903 or Credit in 2003) and (MATH 2002 or 2902) N May not be counted with STAT 3002	Semester 1
STAT 3903	Time Series Analysis (Advanced)	4	P STAT2903 or Credit or better in STAT2003 N STAT3003	Semester 1
STAT 3904	Design of Experiments (Advanced)	4	P STAT 3902 or credit or better in STAT 3002. N May not be counted with STAT 3004.	Semester 2
STAT 3905	Markov Processes (Advanced)	4	P (STAT2901 or Credit in STAT2001) and MATH (1003 or 1903 or 1907) N STAT3005	Semester 2
STAT 3907	Multivariate Analysis (Advanced)	4	P STAT 3902 and either STAT (3001 or 3901).	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 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)

<i>Unit of Study</i>	<i>CP</i>	<i>A: Assumed knowledge P: Pre-requisites Q: Qualifying C: Corequisites N: Prohibition</i>	<i>Session</i>
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, 1012, 1013 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 (2771 or 2871) 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, 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, 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 4 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, Computational Science, Statistics or from the following Mathematics and Physics units of study: MATH 3007, MATH 3010, MATH (3016 or 3916), MATH (3020 or 3920), COSC (3001 or 3901), COSC (3002 or 3902)			
NOTE: BIOL (3027 or 3927) and BCHM 3098 are highly recommended units of study for third-year students enrolled in this degree.			

BINF 3001	Bioinformatics Project	8	A 12 credit points from Junior units of study in Software Development (SOFT) and/or Computational Science (COSC) P SOFT (2004 or 2904) and 16 credit points from Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and Genetics and/or Pharmacology N May not be counted with COMP 3206 NB: MBLG2002/2902, BIOL3027/3927 and BCHM3908 are highly recommended.	Semester 2

Table IB: Bachelor of Science (Environmental)

Unit of Study		CP	A: Assumed knowledge P: Pre-requisites 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
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 and CHEM 2404;				
(iii) at least 6 credit points from GEOG 2321 and 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, Plant Science 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 NB: This unit of study is available to students in the Bachelor of Science (Environmental) only.	Semester 2
C. Senior units of study				
Candidates are required to enrol in and complete:				
(i) ENVI 3001 and ENVI 3002; and				
(ii) 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, Plant Science and Soil Science. Units of study in History and Philosophy of Science may be taken on approval of the Director for Environmental Science.				
ENVI 3001	Environmental Law and Planning	12	P ENVI 2001 and 2002. NB: This unit of study is available to students in the Bachelor of Science (Environmental) and the Bachelor of Science (Marine Science) only.	Semester 1
ENVI 3002	Environmental Assessment	12	P ENVI 2001 and 2002. NB: This unit of study is available to students in the Bachelor of Science (Environmental) and the Bachelor of Science (Marine Science) only.	Semester 2
PHYS 3600	Energy and the Environment	4	P ENVI 2002 or 12 credit points of Junior Physics. NB: This unit of study is available to students in the Bachelor of Science (Environmental) only.	Semester 1

Table IC: Bachelor of Science (Marine Science)

Unit of Study		CP	A: Assumed knowledge P: Pre-requisites 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 or 1901); and				
(v) CHEM (1001 or 1101 or 1901).				
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 or Plant Science (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.				
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 prerequisites.	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 2007	Marine Science Field School	6	P 24 credit points of Junior Science units C MARS (2005 or 2905). N MARS2003 NB: This unit of study is available to students in the Bachelor of Science (Marine Science) only.	S1 Intensive
MARS 2905	Global Oceans (Introduction) (Advanced)	6	P 24 credit points of Junior Science units. N May not be counted with MARS2005. NB: This unit of study is available to advanced students only.	Semester 1
MARS 2906	Marine Ecosystems and Geomorphology Adv	6	P 24 credit points of Junior units of study from Science Discipline Areas. N May not be counted with MARS2006. NB: This unit of study is available to advanced students only.	Semester 2
MARS 2907	Marine Science Field School (Advanced)	6	P 24 credit points of Junior Science units. C MARS (2005 or 2905) N May not be counted with MARS2007. NB: This unit of study is available to advanced students only.	S1 Intensive
C. Senior units of study				
Candidates majoring in Marine Science are required to enrol in and complete:				
(i) at least 36 credit points of Senior units of study from MARS and/or NTMP units from this table, and/or the following: BIOL (3011 or 3911), BIOL (3013 or 3913), BIOL (3023 or 3923), BIOL (3040 or 3940); and				
(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, Tropical Marine Network Program (NTMP) or Plant Science units.				
NB: No more than 18 credit points of NTMP units may count toward the degree.				
MARS 3003	Coastal Depositional Environments	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study. NB: From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study	Semester 1a

3. Undergraduate tables and units of study

MARS 3004	Coastal Morphodynamics	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study. NB: From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study	Semester 1b
MARS 3005	Marine Geophysical Data Analysis	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1a
MARS 3006	Dynamics of Ocean Basins and Margins	6	A Prior completion of MARS3005 is highly recommended P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1b
MARS 3008	Energy: Science, Engineering & Economics	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 1
MARS 3103	GIS Simulation Modelling	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study.	Semester 2a
MARS 3104	Coastal Zone Management	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study.	Semester 2b
MARS 3105	Coastal Oceanography & Sediment Dynamics	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409 N GEOL3104 NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 2a
MARS 3106	Physical Marine Habitat	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.	Semester 2b

3. Undergraduate tables and units of study

NTMP 3001	Coral Reef Ecosystems	6	A General concepts in Biology P MARS (2003 and 2001) plus 16 credit points from Intermediate Science units of study. C MARS(2006 or 2906) NB: Department permission required for enrolment. These units are only available to BSc (Marine Science) students. From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2007 or 2907) MARS (2003 and 2001) plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology.	S2 Intensive
NTMP 3003	Fisheries Biology and Management	6	A General concepts in Biology. P MARS (2003 and 2001) plus 16 credit points from Intermediate Science units of study. C MARS(2006 or 2906) NB: Department permission required for enrolment. These units are only available to BSc (Marine Science) students. From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2007 or 2907) MARS (2003 and 2001) plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology.	S2 Intensive
NTMP 3004	Aquaculture	6	A General concepts in Biology. P MARS (2003 and 2001) plus 16 credit points from Intermediate Science units of study. C MARS(2006 or 2906) NB: Department permission required for enrolment. These units are only available to BSc (Marine Science) students. From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2007 or 2907) MARS (2003 and 2001) plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology.	S2 Intensive
NTMP 3005	Coastal Management	6	A General concepts in Biology. P MARS (2003 and 2001) plus 16 credit points from Intermediate Science units of study. C MARS(2006 or 2906) NB: Department permission required for enrolment. These units are only available to BSc (Marine Science) students. From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2007 or 2907) MARS (2003 and 2001) plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology.	S2 Intensive

Table ID: Bachelor of Science (Molecular Biology and Genetics)

Unit of Study	CP	A: Assumed knowledge P: Pre-requisites Q: Qualifying C: Core-quisites 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 (1904 or 1905);				
(ii) CHEM (1101 or 1901 or 1903 or 1905 or 1906 or 1907) and CHEM (1102 or 1902 or 1904 or 1909) (The combination of CHEM 1907 and 1909 is the preferred option.);				
(iii) from 2005, MBLG 1001;				
(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.				
BIOL 1904	Living Systems Molecular (Ad- vanced)	6	A HSC 2-unit Biology or BIOL1901 or equivalent. N BIOL (1002 or 1003 or 1902 or 1903 or 1905) NB: This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) only.	Semester 2

3. Undergraduate tables and units of study

BIOL 1905	Human Biology Molecular (Advanced)	6	A HSC 2-unit Biology or BIOL1901 or equivalent N BIOL (1002 or 1003 or 1902 or 1903 or 1904) NB: This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) only.	Semester 2
CHEM 1905	Chemistry 1A Molecular (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 unit of study: 6 credit points of Junior Mathematics N CHEM (1001 or 1101 or 1901 or 1903 or 1906 or 1909) NB: Department permission required for enrolment. This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) only.	Semester 1
CHEM 1906	Chemistry 1A Mol (Special Studies Prog)	6	P UAI of at least 98.7 and HSC Chemistry result in band 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 1901 or 1903 or 1905 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. This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) only.	Semester 1
CHEM 1907	Chemistry 1 Life Sciences A Mol (Adv)	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 or 1908) NB: This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) only.	Semester 1
CHEM 1909	Chemistry 1 Life Sciences B Mol (Adv)	6	P CHEM (1907 or 1908) or equivalent C Recommended concurrent units of study: 6 credit points of Junior Mathematics. N CHEM (1001 or 1101 or 1901 or 1903 or 1905 or 1906) 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

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 (2771 or 2871) and (2072 or 2972) (Note that from 2006, MBLG 2071/2971 will replace MBLG 2771/2871);

(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 or 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) Semester 1 core units of study:

(ii) BCHM (3001 or 3901); and

3. Undergraduate tables and units of study

(iii) BIOL (3018 or 3918) and (3027 or 3927); and				
(iv) Semester 2 elective units of study: select 24 credit points from BCHM (3004 or 3904), BIOL (3025 or 3928), BIOL (3026 or 3929), all of CHEM (3105 or 3195) and CHEM (3205 or 3295) and CHEM (3306 or 3396) and either of CHEM (3108 or 3198) or CHEM (3305 or 3395), MICR (3004 or 3904).				
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.				
BCHM 3004	Cellular and Medical Biochemistry Mol	12	P A total of at least 16 credit points of Intermediate MBLG and BCHM units. N BCHM (3002 or 3902 or 3904) NB: This unit of study is available to students in the BSc (Molecular Biology and Genetics) degree only. From 2006 the prerequisites will be: (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972))	Semester 2
BCHM 3904	Cellular and Med Biochemistry Mol (Adv)	12	P Distinction in a total of at least 16 credit points from Intermediate MBLG and BCHM units N BCHM (3002 or 3902 or 3904) NB: This unit of study is available to students in the BSc (Molecular Biology and Genetics) degree only. From 2006 the prerequisites will be: Distinctions in (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972))	Semester 2
BIOL 3928	Evolutionary Genetics Molecular (Adv)	6	P Distinction average in 16 credit points of Intermediate Biology including MBLG ((2001 or 2901) and (2002 or 2902)). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. N BIOL (3025 or 3925) NB: The completion of 6 credit points of MBLG units of study is highly recommended. This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) and the Bachelor of Medical Science only.	Semester 2a
BIOL 3929	Developmental Genetics Molecular (Adv)	6	P Distinction average in 16 credit points of Intermediate Biology including MBLG (2001 or 2901 and 2002 or 2902). N BIOL (3026 or 3926). NB: This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) only. In 2006 the prerequisites will be: Distinction average in 12 credit points from MBLG (2771 or 2871) and MBLG (2072 or 2972).	Semester 2b
MICR 3004	Molecular Biology of Pathogens Molecular	12	P MICR 2909. N MICR (3002, 3902 or 3904). NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) and MBLG (2071 or 2971 or 2001 or 2901 or 2771 or 2871)	Semester 2
MICR 3904	Molecular Biology of Pathogens Mol (Adv)	12	P Distinction in MICR 2909. N MICR (3002, 3902 or 3904). NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) at Distinction level and MBLG (2071 or 2971 or 2001 or 2901 or 2771 or 2871)	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: Pre-requisites 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;				
(iii) at least 12 credit points of Junior units of study from the Science Subject Area of Mathematics;				
(iv) from 2005, 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 or 1907) 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 (Nutrition) and the Bachelor of Science (Molecular Biotechnology) only.	Semester 1
CHEM 1909	Chemistry 1 Life Sciences B Mol (Adv)	6	P CHEM (1907 or 1908) or equivalent C Recommended concurrent units of study: 6 credit points of Junior Mathematics. N CHEM (1001 or 1101 or 1901 or 1903 or 1905 or 1906) 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) MOBT 2102;				
(ii) MBLG (2771 or 2871) 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 3102;				
(ii) BIOL (3027 or 3927);				
(iii) CHEM (3205 or 3295) and CHEM (3105/3195 or 3306/3396);				
(iv) BCHM 3098; and				
(v) at least 24 credit points from Senior units of study (the inclusion of BIOL (3018 or 3918) or CHEM (3203/3293 and 3209/3299) or BCHM (3001 or 3901) is highly recommended) 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 Science.				
MOBT 3102	Molecular Biotechnology 3B	6	P For 2005 entry: MOBT2002 From 2006: MOBT3101 N MOBT3002 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: Pre-requisites 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 1901) and BIOL (1002 or 1902 or 1003 or 1903);				
(ii) Life Sciences Chemistry [CHEM (1101 or 1901 or 1903 or 1908) and CHEM (1102 or 1902 or 1904 or 1909)]; and CHEM (1102 or 1902 or 1904 or 1909)];				
(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) MBLG 1001.				
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 (2771 or 2871) (From 2006, 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 CHEM (1101 or 1901 or 1903 or 1909) and CHEM (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. C MBLG2771 (or MBLG2871), PHSI2005 N NUTR2901 NB: From 2006 the prerequisites will be MBLG 1001 and CHEM (1101 or 1901 or 1903 or 1909) and CHEM (1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1901) and BIOL (1002 or 1003 or 1902 or 1903).	Semester 1
NUTR 2912	Nutritional Science Introductory (Adv)	6	A NUTR2911 P CHEM (1101 or 1901 or 1903 or 1909) and CHEM (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. C BCHM2072 (or BCHM2972) and PHSI2006 N NUTR2902 NB: From 2006 the prerequisites will include MBLG1001	Semester 2
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 2011 or 2909) NB: For progression on to Senior Microbiology units, students must also complete MBLG1001 and MICR (2022 or 2922)	Semester 1
MICR 2022	Applied Microbiology	6	P MICR (2021 or 2921 or 2001 or 2901) except for students taking MICR2024 N MICR (2922 or 2002 or 2902 or 2004 or 2012 or 2909) NB: For progression on to Senior Microbiology units, students must also complete MBLG1001	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 3901 and NUTR 3902;				
(ii) BCHM (3002 or 3902); and				
(iii) AGCH (3025 and 3026) or 12 credit points from the following Senior units of study: BCHM (3001 or 3901), MICR 3001, PHSI (3001 or 3901).				
NUTR 3901	Nutrition in Individuals (Advanced)	12	P NUTR 2902	Semester 1

NUTR 3902	Nutrition in Populations (Advanced)	12	P NUTR2902	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 3901 and NUTR 3902.				
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; 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 3901 and NUTR 3902, 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, the BAppSc(ExSpSc) or the BAppSc(ExSpSc&Nutr).				
For information on units from the BAppSc (ExSpSc), please refer to the Handbook of the Faculty of Health Sciences.				
Year 1				
Candidates are required to enrol in and complete in their first year:				
(i) CHEM (1101 or 1908) and CHEM (1102 or 1909), or at least 12 credit points of Junior units of study from the Science Subject Area of Chemistry (with special permission);				
(ii) BIOS 1135, BIOS 1137 and BIOS 1139;				
(iii) EXSS 1005, EXSS 1018, EXSS 1019 and EXSS 1033;				
(iv) BACH 1149; and				
(v) MBLG 1001.				
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 1905 or 1906 or 1909)	Summer, Semester 1, Semester 2
CHEM 1102	Chemistry 1B	6	P CHEM (1101 or 1901) or a Distinction in CHEM1001 or equivalent C Recommended concurrent units of study: 6 credit points of Junior Mathematics N CHEM (1002 or 1902 or 1904 or 1907 or 1908)	Summer, Semester 1, Semester 2
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 or 1907) 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 (Nutrition) and the Bachelor of Science (Molecular Biotechnology) only.	Semester 1
CHEM 1909	Chemistry 1 Life Sciences B Mol (Adv)	6	P CHEM (1907 or 1908) or equivalent C Recommended concurrent units of study: 6 credit points of Junior Mathematics. N CHEM (1001 or 1101 or 1901 or 1903 or 1905 or 1906) 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
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)	Semester 2
Year 2				
Candidates are required to enrol in and complete in their second year:				
(i) EXSS 2019 and EXSS 2022, BACHxxxx and BIOS 2098;				
(ii) NUTR 2911 and NUTR 2912;				
(iii) MBLG (2771 or 2871), BCHM (2072 or 2972); and				
(iv) MATH 1015.				

3. Undergraduate tables and units of study

BCHM 2072	Human Biochemistry	6	P MBLG1001 or (6 credit points of Junior Biology or MBLG2771 or MBLG2871 for enrolments in 2005 only) and 12 credit points of Junior Chemistry N BCHM2972, BCHM2002, BCHM2102, BCHM2902, BCHM2112 NB: From 2006, the prerequisites will be MBLG1001 and 12 credit points of Junior Chemistry. The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 2
BCHM 2972	Human Biochemistry (Advanced)	6	P MBLG1001 or (6 credit points of Junior Biology or MBLG2771 or MBLG2871 for enrolments in 2005 only) and 12 credit points of Junior Chemistry). Entry also requires a Distinction in two of the prerequisite units of study. N BCHM2072, BCHM2002, BCHM2102, BCHM2902, BCHM2112 NB: The completion of 6 credit points of MBLG units of study is highly recommended. From 2006, the prerequisites will be Distinction in BCHM (2071 or 2971) or (Distinction in MBLG1001 and Distinction in 12 credit points of Junior Chemistry).	Semester 2
MBLG 2771	Molecular Biology and Genetics A	6	P BIOL (1001 or 1101 or 1901) except for students co-enrolled in BCHM 2071/2971 and 12 credit points of Junior Chemistry. For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree the completion of all Junior units listed in Table IF N MBLG (1001, 2871, 2071, 2971, 2001, 2101, 2901, 2111)	Semester 1
MBLG 2871	Molecular Biology and Genetics A (Adv)	6	P BIOL (1001,1101 or 1901) except for students co-enrolled in BCHM 2071/2971 and 12 credit points of Junior Chemistry. For Combined BAppSc(Exercise and Sport Science)/BSc(Nutrition) degree the completion of all Junior units listed in Table IF. Also required is a Distinction or better in two of the prerequisite units of study. N MBLG (1001 or 2771 or 2071 or 2971 or 2001 or 2101 or 2901 or 2111) NB: The completion of 6 credit points of MBLG units of study is highly recommended.	Semester 1
NUTR 2911	Food Science Introductory (Advanced)	6	P CHEM (1101 or 1901 or 1903 or 1909) and CHEM (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. C MBLG2771 (or MBLG2871), PHSI2005 N NUTR2901 NB: From 2006 the prerequisites will be MBLG 1001 and CHEM (1101 or 1901 or 1903 or 1909) and CHEM (1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1901) and BIOL (1002 or 1003 or 1902 or 1903).	Semester 1
NUTR 2912	Nutritional Science Introductory (Adv)	6	A NUTR2911 P CHEM (1101 or 1901 or 1903 or 1909) and CHEM (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. C BCHM2072 (or BCHM2972) and PHSI2006 N NUTR2902 NB: From 2006 the prerequisites will include MBLG1001	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.	Summer, Semester 1
Year 3				
Candidates are required to enrol in and complete in their third year:				

(i) EXSS 2018, EXSS 2020, EXSS 2023, EXSS 3023, EXSS 3027, EXSS 3030 and EXSS3xxx (Environmental Physiology);				
(ii) MATH 1011 and STAT 2012.				
MATH 1011	Life Sciences Calculus	3	A HSC Mathematics N MATH (1001 or 1901 or 1906).	Semester 1
STAT 2012	Statistical Tests	6	A STAT (2011 or 2002) P MATH (1005 or 1905 or 1015) N STAT (2004 or 2912 or 1022)	Semester 2
Year 4				
Candidates are required to enrol in and complete in their fourth year:				
(i) NUTR 3901 and NUTR 3902;				
(ii) EXSS 3024 and EXSSXXXXY (Exercise in Health & Disease and Nutrition in Sport Performance); and				
(iii) BCHM (3002 or 3902).				
BCHM 3002	Cellular and Medical Biochemistry	12	P A total of at least 16 credit points of Intermediate MBLG and BCHM units. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501, 2502 and 2504). N BCHM (3902 or 3004 or 3904) NB: From 2006 the prerequisites will be: (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units	Semester 2
BCHM 3902	Cellular and Medical Biochemistry (Adv)	12	P Distinction in a total of at least 16 credit points from Intermediate MBLG and BCHM units. For BMedSc students: 32 credit points of Intermediate BMED units including Distinctions in BMED (2501, 2502 and 2504). N BCHM (3002 or 3004 or 3904). NB: From 2006 the prerequisites will be: Distinctions in (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units	Semester 2
NUTR 3901	Nutrition in Individuals (Advanced)	12	P NUTR 2902	Semester 1
NUTR 3902	Nutrition in Populations (Advanced)	12	P NUTR2902	Semester 2
Year 5				
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				
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.				
NUTR 4001	Clinical Nutritional Science A	24	NB: Department permission required for enrolment.	Semester 1
NUTR 4002	Clinical Nutritional Science B	24	NB: Department permission required for enrolment.	Semester 2
NUTR 4101	Nutrition Research A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2
NUTR 4102	Nutrition Research B	12	C NUTR 4101	Semester 1, Semester 2
NUTR 4103	Nutrition Research C	12	C NUTR 4102	Semester 1, Semester 2
NUTR 4104	Nutrition Research D	12	C NUTR 4103	Semester 1, Semester 2

Table II: Law units of study

Unit of Study		CP	A: Assumed knowledge P: Pre-requisites Q: Qualifying C: Corequisites N: Prohibition	Session
LAWS 1002	Contracts	8	P Foundations of Law	Summer, Semester 1, Semester 2
LAWS 1003	Criminal Law	8		Semester 1, Semester 2
LAWS 1006	Foundations of Law	6	NB: Unit is part of Combined Law.	Semester 1
LAWS 1008	Legal Research	0		Semester 1, Semester 2
LAWS 1010	Torts	6	P Foundations of Law N LAWS3001 Torts NB: Unit is part of the Combined Law program for students commencing in 2005.	Semester 2
LAWS 3000	Federal Constitutional Law	10	P 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 for re-enrolling students in 2005	Semester 2

Table III: Bachelor of Information Technology

Unit of Study		CP	A: Assumed knowledge P: Pre-requisites Q: Qualifying C: Corequisites N: Prohibition	Session
Table III(i) Core Software Development				
Junior units of study				
SOFT 1001	Software Development 1	6	N May not be counted with SOFT 1901 or COMP (1001 or 1901)	Summer, Semester 1, Semester 2
SOFT 1901	Software Development 1 (Adv)	6	A HSC Mathematics Extension 1 P UA1 at least that for acceptance into BSc(Adv) degree program. N May not be counted with SOFT 1001 or COMP (1001 or 1901) NB: Department permission required for enrolment. Entry requires departmental permission, except for students in BSc(Adv), BCST(Adv) or BIT degrees	Semester 1, Semester 2
SOFT 1002	Software Development 2	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) N May not be counted with SOFT 1902 or COMP (1002 or 1902)	Summer, Semester 1, Semester 2
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) NB: Department permission required for enrolment.	Semester 2, Semester 1
Intermediate units of study				
SOFT 2130	Software Construction 1	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP (2004 or 2904) or SOFT (2001 or 2004 or 2830).	Semester 2
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).	Semester 2
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO1000 level P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC N INFO (2000 or 2810 or 2900)	Semester 1
INFO 2810	Systems Analysis and Modelling (Adv)	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 level P ISYS1003 or INFS1000 or INFO1000 or INFO1003 or SOFT (1001 or 1901) or COMP (1001 or 1901) or 6 crpts of COSC; and Distinction in one of these or in a 2000-level or above INFO, ISYS or SOFT unit. N INFO (2000 or 2110 or 2900)	Semester 1
Table III(ii) Foundation Electives				
Intermediate units of study				
COMP 2160	Data Structures	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) C MATH (1004 or 1904 or 2009 or 2011 or 2069 or 2969) N May not be counted with 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. C MATH (1004 or 1904 or 2009 or 2011 or 2069 or 2969) N May not be counted with COMP(2111 or 2811 or 2002 or 2902 or 2160)	Semester 1
INFO 2120	Database Systems 1	6	A Basics of data modeling, experience working with information technology tools P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC 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 ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC; Distinction in one of these or in a 2000-level or above unit in INFO, ISYS or SOFT. 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) P ISYS1003 or INFO1000 or INFO1003 or INFS1000 N ISYS (2006 or 2007)	Semester 1
NETS 2150	Fundamentals of Networking	6	P ELEC1601 or SOFT (1001 or 1901) N NETS (2009 or 2909 or 2850), ELEC (3506 or 3504)	Semester 1
NETS 2850	Fundamentals of Networking (Advanced)	6	P ELEC1601 or SOFT (1001 or 1901) in 2005, 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 III(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 ACCT1001 and ACCT1002.	Semester 2
ARIN 1000	History and Theory of Informatics	6	C ISYS1003 or INFO1000 or INFO1003 N Available to BA Informatics, BCST and BIT students only	Semester 1
CLAW 1001	Commercial Transactions A	6		Semester 1, Semester 2
CLAW 1002	Commercial Transactions B	6	P CLAW1001	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 May not be counted with DECO 2605.	Semester 2
DECO 1006	Understanding Design & Cognition	6	N May not be counted with DECO 1004	Semester 1
DECO 1007	Design Data Mgmt & Data Modelling	6	N May not be counted with DECO 2004 or INFO 2005.	Semester 1
ELEC 1601	Professional Computer Engineering	6	N NETS2008 Computer System Organisation, NETS2908 Computer System Organisation (Adv), COMP2001 Computer Systems, COMP2901 Computer Systems (Adv).	Semester 1
ELEC 1103	Professional Electronic Engineering	6	A HSC Physics, HSC Mathematics extension 1. N ELEC1102 Foundations of Electronic Circuits.	Semester 2
INFS 1000	Business Information Systems Foundations	6	N ISYS1003 or INFO1003	Semester 1, Semester 2, Summer
INFO 1003	Foundations of Information Technology	6	A Basic computer operations N INFO1000, INFS1000, ISYS1003	Semester 1, Semester 2

3. Undergraduate tables and units of study

MATH 1011	Life Sciences Calculus	3	A HSC Mathematics N MATH (1001 or 1901 or 1906).	Semester 1
MATH 1012	Life Sciences Algebra	3	A HSC Mathematics N MATH (1002 or 1902).	Semester 2
MATH 1013	Differential and Difference Equations	3	A HSC Mathematics 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.	Summer, Semester 1
MATH 1001	Differential Calculus	3	A HSC Mathematics Extension 1 N MATH 1011 or 1901 or 1906.	Summer, Semester 1
MATH 1901	Differential Calculus (Advanced)	3	A HSC Mathematics Extension 2 N MATH (1011 or 1001 or 1906)	Semester 1
MATH 1002	Linear Algebra	3	A HSC Mathematics Extension 1 N MATH 1902 or 1012	Semester 1, Summer
MATH 1902	Linear Algebra (Advanced)	3	A HSC Mathematics Extension 2 N MATH (1002 or 1012)	Semester 1
MATH 1003	Integral Calculus and Modelling	3	A HSC Mathematics Extension 2 or MATH 1001 N MATH 1013 or 1903 or 1907	Summer, Semester 2
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 1004	Discrete Mathematics	3	A HSC Mathematics Extension 1 N MATH 1904 or MATH2011	Summer, Semester 2
MATH 1904	Discrete Mathematics (Advanced)	3	A HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1 N MATH1004 or MATH2011	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)	Summer, Semester 2
MATH 1905	Statistics (Advanced)	3	A HSC Mathematics Extension 2 or result in Band E4 or better of HSC Mathematics Extension 1 N MATH (1005 or 1015) or ECMT Junior units of study or STAT (1021 or 1022)	Semester 2
Intermediate units of study				
ARIN 2100	Web Tools	8	P 18 junior credit points NB: Available to students enrolled in the BA Informatics and BA students	Summer, Semester 1, Semester 2
CLAW 2006	Legal Issues for e-Commerce	8	P 48 credit points	Semester 1, Semester 2
DECO 2010	Collaborative Virtual Environments	6	A DECO (1001 and 1002) or (1100 and 1200) or (2101 and 2102) or INFO 1000 N May not be counted with 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 May not be counted with 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 May not be counted with 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

3. Undergraduate tables and units of study

DECO 2102	Interactive Multimedia Design	6	P DECO 2101 or DECO 1001 N May not be counted with 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 May not be counted with DECO (1003 or 2001 or 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.	Semester 2
DECO 2606	Real Time 3D Multimedia	6	P DECO (2001 or 1008 or 2103) and (SOFT 1001 or DECO 1200 or DECO 2011) NB: Department permission required for enrolment. Places in this unit are limited by teaching resources. Please apply directly to the Faculty of Architecture for a place. Bachelor of Design Computing 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 ELEC1101 Foundations of Computer Systems or ELEC1601 Professional Computer Engineering. N ELEC3601 Digital Systems Design, ELEC3608 Digital Systems Design.	Semester 2
INFS 2000	Business Information Systems	8	P ACCT 1002 or ACCT 1004 and INFS 1000 or ISYS 1003 or INFO 1003 N ACCT2003	Semester 1, Semester 2
INFS 2005	Business Process Integration & Modelling	8	P INFS2000 or ACCT2003	Semester 2
MATH 2061	Linear Mathematics and Vector Calculus	6	P MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907) N MATH (2001 or 2901 or 2002 or 2902 or 2961 or 2067)	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

3. Undergraduate tables and units of study

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 (MATH1902 or Credit in MATH1002) 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
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 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	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)	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 or 1022)	Semester 2
STAT 2912	Statistical Tests (Advanced)	6	A STAT (2911 or 2901) P MATH1905 or Credit in MATH1005 N STAT (2004 or 2012 or 1022)	Semester 2

Table III(iv) Senior and Honours IT-related Electives

Senior units of study

NOTE: As part of the shift to a 6-credit point standard in 2005, many of these units will not be offered from 2006. The 2006 offerings from the School of Information Technologies are shown in the Supplementary Table which follows Table III.

ARIN 3000	Technocultures	8	P 18 junior credit points NB: Available to students enrolled in BA Informatics	Semester 1
BCHM 3005	Computational Biochemistry		NB: *** No info available for 2005, ***	
BCHM 3905	Computational Biochemistry (Advanced)		NB: *** No info available for 2005, ***	
BIOL 3027	Bioinformatics and Genomics	6	P MBLG (2001 or 2101 or 2901) and MBLG (2002 or 2902) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. N BIOL3927 NB: A recommended unit of study for third year students enrolled in the BSc (Bioinformatics) degree. In 2006 the prerequisites will be: MBLG (2771 or 2871)	Semester 1b

3. Undergraduate tables and units of study

COSC 3001	Scientific Computing	4	A Programming experience in MATLAB P 12 credit points chosen from Junior Mathematics and Statistics, 16 credit points of Intermediate units in Science subject areas. N COSC3901, PHYS3301, PHYS3901	Semester 1
COSC 3901	Scientific Computing (Advanced)	4	A Programming experience in MATLAB P 12 credit points chosen from Junior Mathematics and Statistics and 16 credit points of Intermediate units in Science subject areas with a Credit average. N COSC3001, PHYS3301, PHYS3901	Semester 1
COSC 3002	Parallel Computing and Visualisation	4	A Programming experience in C and MATLAB or equivalent P 12 credit points from the Science subject areas of Junior Mathematics and Statistics and 16 credit points of Intermediate units in Science subject areas. N COSC3601, COSC3902, PHYS3303, PHYS3933	Semester 2
COSC 3902	Parallel Computing & Visualisation (Adv)	4	A Programming experience in C and MATLAB or equivalent P 12 credit points from the Science subject areas of Junior Mathematics and Statistics and 16 credit points, average grade Credit, of Intermediate units in Science subject areas. N COSC3601, COSC3002, PHYS3303, PHYS3933	Semester 2
COMP 3002	Artificial Intelligence	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and COMP (2003 or 2903) and 8 credit points 2000-level MATH and/or STAT and/or ECMT N May not be counted with COMP 3902	Semester 1
COMP 3902	Artificial Intelligence (Advanced)	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and COMP (2003 or 2903) and 8 credit points 2000-level MATH and/or STAT and/or ECMT and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. N May not be counted with COMP 3002	Semester 1
COMP 3111	Algorithms 2	4	A MATH 2009 P COMP (2111 or 2811 or 2002 or 2902) and MATH (1004 or 1904 or 2009 or 2011) and MATH (1005 or 1905) N May not be counted with COMP (3811 or 3001 or 3901)	Semester 1
COMP 3811	Algorithms 2 (Advanced)	4	P COMP (2002 or 2902 or 2111 or 2811) and MATH (1004 or 1904 or 2009 or 2011) and MATH (1005 or 1905). Also Distinction in a COMP, SOFT or MATH intermediate unit. N COMP (3111 or 3001 or 3901)	Semester 1
COMP 3310	Theory of Computation	6	P COMP (2160 or 2860 or 2111 or 2811 or 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: Department permission required for enrolment. Non Architecture students may apply directly to the Faculty of Architecture.	Semester 2
DECO 3005	Advanced Interactive Multimedia Design	6	P DECO (2002 or 1200 or 2102) N May not be counted with 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 students will receive preference.	Semester 1

3. Undergraduate tables and units of study

DECO 3006	Principles of 3D Animation	6	P DECO (2001 or 1008 or 2103) N DESC 9019 or 9141 NB: Department permission required for enrolment. First preference given to third year students in the Bachelor of Design Computing. Non Architecture students may apply directly to the Faculty of Architecture on a quota basis.	Semester 1
DECO 3007	Designing Tangible Computing	6	A DECO 1007 and DECO (1008 or 2103) 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 students will receive preference.	Semester 2
EBUS 3003	e-Business System Design	6	A SOFT1002 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 and Systems or ELEC 2302 Signals and 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	Communications 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
ELEC 3506	Data Communications 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 ELEC1101 Foundations of Computer Systems or ELEC2602 Digital System Design. N ELEC2601 Microcomputer Systems.	Semester 2
ELEC 3608	Digital Systems Design	6	A ELEC1101 Foundations of Computer Systems. N ELEC3601 Digital Systems Design, ELEC2602 Digital System Design.	Semester 1
ELEC 3702	Management for Engineers	6	A Nil. N ELEC3701 Management for Engineers.	Semester 1
INFO 3005	Organisational Database Systems	4	P INFO (2000 or 2900) and INFO (2005 or 2905) N INFO 3905 or COMP (3005 or 3905)	Semester 1

3. Undergraduate tables and units of study

INFO 3905	Organisational Database Systems (Adv)	4	P INFO (2000 or 2900) and INFO (2005 or 2905) and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above N COMP (3005 or 3905) or INFO 3005	Semester 1
INFS 3000	Management Information Systems	8	P INFS2000 or ACCT2003	Semester 1
INFS 3005	Enterprise Systems	8	P INFS2005 or ACCT2003	Semester 1
INFS 3010	IT Assurance and Control	8	P INFS2000 or ACCT2003 N ACCT3005	Semester 1
INFS 3015	Managing Information & Knowledge Assets	8	P INFS2000 or ACCT2003 and at least 48 credit points	Semester 2
INFS 3020	e-Commerce Business Models	8	P One of INFS1000, ISYS1003 and INFO1000. Also at least 48 credit points. N ACCT3006	Semester 2
ISYS 3000	Information Systems Management	4	P INFO2007 or ISYS2007 or ISYS2140	Semester 2
ISYS 3012	Project Management and Practice	4	P INFO (2000 or 2900)	Semester 1
ISYS 3015	Analytical Methods for IS Professionals	4	P [ARIN 1000 or ENGL (1050 or 1005 or 1000) or LNGS (1001 or 1002 or 1005) or ECOF (1001 or 1002)] and 16 credit points of intermediate or senior units of study, including ISYS 2006 and (ISYS 2007 or INFO 2007) and INFO (2000 or 2900) NB: Enrolment Restriction: Entry is restricted to students who have a credit or better in at least one of the Prerequisite units.	Semester 1
ISYS 3113	Arts Informatics Systems	4	P INFO (2000 or 2900) and INFO (2005 or 2905) and [(ARIN 1000 or ENGL (1050 or 1005 or 1000) or LNGS (1001 or 1002 or 1005) or ECOF (1001 or 1002)]	Semester 1
MARS 3103	GIS Simulation Modelling	6	P MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study.	Semester 2a
MATH 3002	Rings and Fields	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2008 or 2908) N MATH 3902	Semester 1
MATH 3902	Algebra I (Advanced)	4	P 12 credit points of Intermediate Mathematics (strongly advise MATH 2902) N MATH 3002	Semester 1
MATH 3005	Logic	4	P (for all but BCST students) 8 credit points of Intermediate Mathematics; (for BCST students) 8 credit points of Intermediate Mathematics or 12 credit points of Junior Mathematics at Advanced level	Semester 1
MATH 3007	Coding Theory	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902)	Semester 2
MATH 3009	Number Theory	4	P 8 credit points of Intermediate Mathematics	Semester 2
MATH 3010	Information Theory	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901 and some probability theory)	Semester 2
MATH 3016	Mathematical Computing I	4	P 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903 or 1906 or 1907. N May not be counted with MATH 3916.	Semester 1
MATH 3916	Mathematical Computing I (Advanced)	4	P 8 credit points of Intermediate Mathematics and one of MATH 1903 or 1907 or Credit in MATH 1003 N May not be counted with MATH 3016	Semester 1
MATH 3019	Signal Processing	4	P MATH (2001 or 2901) and MATH (2005 or 2905) N May not be counted with MATH 3919	Semester 1

3. Undergraduate tables and units of study

MATH 3919	Signal Processing (Advanced)	4	P MATH 2905 or Credit in MATH 2005 N May not be counted with MATH 3019	Semester 1
MATH 3024	Elementary Cryptography and Protocols		NB: *** No info available for 2005. ***	
MATH 3925	Public Key Cryptography (Advanced)	4	P 12 credit points from Intermediate or senior mathematics. Strongly recommend MATH 3902.	Semester 2
MULT 3004	Computer Graphics	4	P COMP (2111 or 2811 or 2002 or 2902 or 2160 or 2860) and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and MATH (1002 or 1902) N MULT 3904 or COMP (3004 or 3904).	Semester 2
MULT 3904	Computer Graphics (Advanced)	4	P COMP (2111 or 2811 or 2002 or 2902 or 2160 or 2860) and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and MATH (1002 or 1902) and Distinction in a COMP or MULT or SOFT unit at 2000-level or above. N MULT3004 or COMP (3004 or 3904)	Semester 2
MULT 3018	Multimedia Interaction	4	P SOFT (2004 or 2904) or COMP (2004 or 2904) N May not be counted with MULT 3918	Semester 1
MULT 3918	Multimedia Interaction (Advanced)	4	P 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 MULT3018	Semester 1
MULT 3019	Digital Media	4	P COMP (2111 or 2811 or 2002 or 2902) and MATH (1001 or 1901) and MATH (1002 or 1902) and MATH (1003 or 1903). N May not be counted with MULT 3919.	Semester 1
MULT 3919	Digital Media (Advanced)	4	P COMP (2111 or 2811 or 2002 or 2902) and MATH (1001 or 1901) and MATH (1002 or 1902) and MATH (1003 or 1903) and Distinction in a MULT or SOFT unit at 2000-level or above. N May not be counted with MULT 3019.	Semester 1
NETS 3007	Network Protocols	4	P [[NETS (2008 or 2908) and NETS (2009 or 2909)] or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901). N NETS3907 or COMP (3007 or 3907) or ELEC (3506 or 3604)	Semester 1
NETS 3907	Network Protocols (Advanced)	4	P [[NETS (2008 or 2908) and NETS (2009 or 2909)] or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and Distinction in a NETS or SOFT unit at 2000-level or above. N NETS3007, COMP 3007, COMP3907, ELEC3506, ELEC3604	Semester 1
NETS 3009	Operating Systems	4	P [NETS (2008 or 2908) or ELEC (1601 or 2601)] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT(2001 or 2901). N NETS3909 or COMP (3009 or 3909)	Semester 2
NETS 3909	Operating Systems (Advanced)	4	P [NETS (2008 or 2908) or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT(2001 or 2901) and Distinction in a NETS or SOFT unit at 2000-level or above. N May not be counted with NETS 3009 or COMP (3009 or 3909).	Semester 2
NETS 3016	Computer and Network Security	4	A MATH (1004 and 1005). P [[NETS (2008 or 2908) and NETS (2009 or 2909)] or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)]. N NETS 3916, ELEC 5610, ELEC5616	Semester 1
NETS 3916	Computer and Network Security (Advanced)	4	A MATH (1004 and 1005). P [[NETS (2008 or 2908) and NETS (2009 or 2909)] or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and Distinction in a NETS or SOFT unit at 2000-level or above. N NETS 3016, ELEC 5610, ELEC5616.	Semester 1

3. Undergraduate tables and units of study

NETS 3017	Network Programming and Distributed Apps	4	P [[NETS (2008 or 2908) and NETS (2009 or 2909)] or NETS (2150 or 2850) or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901). N NETS 3917, ELEC 3604, ELEC3506	Semester 2
NETS 3917	Network Prog & Distributed Apps (Adv)	4	P [[NETS (2008 or 2908) and NETS (2009 or 2909)] or NETS2150 or NETS2850 or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and Distinction in a NETS or SOFT unit at 2000-level or above. N NETS3017, ELEC3604, ELEC3506	Semester 2
SOFT 3101	Object-Oriented Software Design	4	P SOFT (2001 or 2901) and INFO (2000 or 2900) and INFO (2005 or 2905) and [SOFT (2004 or 2904) or COMP (2004 or 2904)]. N May not be counted with SOFT 3801 or COMP (3008 or 3908).	Semester 1
SOFT 3801	Object-Oriented Software Design (Adv)	4	P SOFT (2001 or 2901) and INFO (2000 or 2900) and INFO (2005 or 2905) and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and Distinction in a SOFT or INFO unit at 2000-level or above. N May not be counted with SOFT 3101 or COMP (3008 or 3908).	Semester 1
SOFT 3102	User Interface Design and Programming	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] N SOFT 3802 or COMP (3102 or 3802).	Semester 1
SOFT 3802	User Interface Design Programming (Adv)	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and Distinction in a SOFT or INFO unit at 2000-level or above. N SOFT 3102 or COMP (3102 or 3802).	Semester 1
SOFT 3103	Software Validation and Verification	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and MATH (1005 or 1905) N May not be counted with SOFT 3803	Semester 2
SOFT 3803	Software Validation & Verification (Adv)	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and MATH (1005 or 1905) and Distinction in a SOFT or INFO unit at 2000-level or above. N May not be counted with SOFT 3103.	Semester 2
SOFT 3104	Software Development Methods 2	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) N May not be counted with SOFT 3804 or COMP (3100 or 3800).	Semester 1
SOFT 3804	Software Development Methods 2 (Adv)	4	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and Distinction in a SOFT or INFO unit at 2000-level or above. N May not be counted with SOFT 3104 or COMP (3100 or 3800).	Semester 1
STAT 3001	Distribution Theory and Inference	4	P MATH (1003 or 1903 or 1907) and STAT (2003 or 2903) N STAT 3901	Semester 1
STAT 3901	Statistical Theory (Advanced)	4	P (MATH 2001 or 2901) and STAT 2903 N STAT 3001	Semester 1
STAT 3002	Applied Linear Models	4	P STAT 2004 (or STAT 1022 for Arts students) and MATH (1002 or 1902). N May not be counted with STAT 3902	Semester 1
STAT 3902	Linear Models (Advanced)	4	P STAT 2004 and (STAT 2903 or Credit in 2003) and (MATH 2002 or 2902) N May not be counted with STAT 3002	Semester 1
STAT 3003	Time Series Analysis	4	P STAT (2003 or 2903) N May not be counted with STAT3903	Semester 1
STAT 3903	Time Series Analysis (Advanced)	4	P STAT2903 or Credit or better in STAT2003 N STAT3003	Semester 1

3. Undergraduate tables and units of study

STAT 3004	Design of Experiments	4	A STAT3002 P STAT2004 (or STAT1022 for Arts students) and MATH (1002 or 1902) N STAT3904	Semester 2
STAT 3904	Design of Experiments (Advanced)	4	P STAT 3902 or credit or better in STAT 3002. N May not be counted with STAT 3004.	Semester 2
STAT 3005	Applied Stochastic Processes	4	P MATH (1003 or 1903 or 1907) and STAT (2001 or 2901) N STAT 3905	Semester 2
STAT 3905	Markov Processes (Advanced)	4	P (STAT2901 or Credit in STAT2001) and MATH (1003 or 1903 or 1907) N STAT3005	Semester 2
STAT 3006	Sampling Theory and Categorical Data	4	P STAT 2003 or 2903	Semester 2
STAT 3907	Multivariate Analysis (Advanced)	4	P STAT 3902 and either STAT (3001 or 3901).	Semester 2
Honours units of study				
COMP 4044	Data Mining and Machine Learning	6	A Elementary statistics P Credit average in 24 credit points of 3000-level study	Semester 1
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
EBUS 4001	e-Business Engineering	6	A EBUS3002 e-Commerce Website Programming or EBUS3004 e-Business Programming. N EBUS5001 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	A Nil. N ELEC4701 Project Management.	Semester 1
ELEC 5303	Computer Control System Design	6	A ELEC3302 Fundamentals of Feedback Control or ELEC 3304 Control or MECH3800 Systems Control or AMME3500 System Dynamics and Control. 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

3. Undergraduate tables and units of study

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 Communication 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). N Nil.	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 Microprocessor 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

3. Undergraduate tables and 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
ISYS 4051	Advanced Data Models	6	A Relational database concepts P Credit average in 24 credit points of 3000-level study	Semester 2
MULT 4043	Multimedia Storage, Retrieval & Delivery	6	A Multimedia data formats, networking concepts, database concepts P Credit average in 24 credit points of 3000-level study	Semester 1
NETS 4040	Advanced Networking Technologies	6	A Understanding of link layer technologies, the TCP/IP protocol stack P Credit average in 24 credit points of 3000-level study N ELEC (4504 and 5501)	Semester 1
NETS 4041	Network-Based High Performance Computing	6	A Understanding of operating systems 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
SOFT 4042	Enterprise-Scale Software	6	A Relational database technology, object-oriented design, C++ P Credit average in 24 credit points of 3000-level study	Semester 1
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).				
BINF 3001	Bioinformatics Project	8	A 12 credit points from Junior units of study in Software Development (SOFT) and/or Computational Science (COSC) P SOFT (2004 or 2904) and 16 credit points from Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and Genetics and/or Pharmacology N May not be counted with COMP 3206 NB: MBLG2002/2902, BIOL3027/3927 and BCHM3908 are highly recommended.	Semester 2
COSC 3701	Computational Science Project	8	A Able to program in a standard language. P 16 credit points of intermediate level natural sciences plus at least one of COSC (1001 or 1901 or 1002 or 1902) or SOFT (1001 or 1901) or MATH (2003 or 2903) or PHYS (2001 or 2901 or 2002 or 2902)	Semester 2
INFO 3600	Major Development Project	12	C 36 crpts from Table III(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 INFO4992	Semester 1, Semester 2
INFO 4992	IT Research Thesis B	12	C INFO4990 and INFO4991	Semester 1, Semester 2
INFS 3090	Business Information Systems Project	8	P Department permission and at least 48 credit points NB: Department permission required for enrolment.	Semester 1, Semester 2
ISYS 3207	Information Systems Project	8	P ISYS 3012 and (ISYS 3015 or ARIN 2000)	Semester 2
SOFT 3200	Software Development Project	8	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and 8 credit points from BIT table III(ii) and 8 credit points from BIT table III(iv) N May not be counted with SOFT 3700.	Semester 1, Semester 2
SOFT 3700	Software Development Project (Advanced)	8	P [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and 8 credit points from BIT table III(ii) and 8 credit points from BIT table III(iv) and Distinction in a 2000- or 3000- level unit from COMP, INFO, MULT, NETS, or SOFT. N May not be counted with SOFT 3200.	Semester 1, Semester 2

Table IIIA: Bachelor of Information Technology Majors

Unit of Study		CP	A: Assumed knowledge P: Pre-requisites Q: Qualifying C: Corequisites N: Prohibition	Session
Senior units of study with codes starting with INFO, COMP, ISYS, MULT, NETS or SOFT listed in this table will not be available until 2006.				
Current students in their final year should refer to Table III for the available Senior units of study in 2005, and to Table IIIA in the 2004 Science Handbook for the constitution of their majors.				
The unit of study INFO 3600 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)	Summer, Semester 2
SOFT 1001	Software Development 1	6	N May not be counted with SOFT 1901 or COMP (1001 or 1901)	Summer, Semester 1, Semester 2
SOFT 1002	Software Development 2	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) N May not be counted with SOFT 1902 or COMP (1002 or 1902)	Summer, Semester 1, Semester 2
Core Intermediate units of study				
COMP 2160	Data Structures	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) C MATH (1004 or 1904 or 2009 or 2011 or 2069 or 2969) N May not be counted with 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 INFO1000 level P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC N INFO (2000 or 2810 or 2900)	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 (2001 or 2004 or 2830).	Semester 2
Core Senior units of study				
COMP 3308	Artificial Intelligence (Introduction)		NB: *** No info available for 2005. ***	
COMP 3309	Algorithms		NB: *** No info available for 2005. ***	
COMP 3310	Theory of Computation	6	P COMP (2160 or 2860 or 2111 or 2811 or 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		NB: *** No info available for 2005. ***	
MATH 3005	Logic	4	P (for all but BCST students) 8 credit points of Intermediate Mathematics; (for BCST students) 8 credit points of Intermediate Mathematics or 12 credit points of Junior Mathematics at Advanced level	Semester 1
MATH 3007	Coding Theory	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902)	Semester 2
MATH 3010	Information Theory	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901 and some probability theory)	Semester 2
MATH 3024	Elementary Cryptography and Protocols		NB: *** No info available for 2005. ***	
MATH 3925	Public Key Cryptography (Advanced)	4	P 12 credit points from Intermediate or senior mathematics. Strongly recommend MATH 3902.	Semester 2
MULT 3306	Multimedia Computing and Processing		NB: *** No info available for 2005. ***	
MULT 3307	Interactive Multimedia Systems		NB: *** No info available for 2005. ***	
SOFT 3300	Software Development Project		NB: *** No info available for 2005. ***	
Elective Honours units of study				

3. Undergraduate tables and units of study

COMP 4044	Data Mining and Machine Learning	6	A Elementary statistics P Credit average in 24 credit points of 3000-level study	Semester 1
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
(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 ISYS1003 or INFO1000 or INFO1003 N Available to BA Informatics, BCST and BIT students only	Semester 1
INFO 1003	Foundations of Information Technology	6	A Basic computer operations N INFO1000, INFS1000, ISYS1003	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)	Summer, Semester 2
Core Intermediate units of study				
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO1000 level P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC N INFO (2000 or 2810 or 2900)	Semester 1
INFO 2120	Database Systems 1	6	A Basics of data modeling, experience working with information technology tools P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC 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 ISYS1003 or INFO1000 or INFO1003 or INFS1000 N ISYS (2006 or 2007)	Semester 1
Core Senior units of study				
INFO 3402	Management of IT Projects and Systems		NB: *** No info available for 2005. ***	
ISYS 3401	Analytical Methods & Information Systems		NB: *** No info available for 2005. ***	
ISYS 3400	Information Systems Project		NB: *** No info available for 2005. ***	
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		NB: *** No info available for 2005. ***	
ISYS 3403	IT Systems in Arts and Humanities		NB: *** No info available for 2005. ***	
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
ISYS 4051	Advanced Data Models	6	A Relational database concepts P Credit average in 24 credit points of 3000-level study	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.	Summer, Semester 1

3. Undergraduate tables and units of study

MATH 1002	Linear Algebra	3	A HSC Mathematics Extension 1 N MATH 1902 or 1012	Semester 1, Summer
MATH 1003	Integral Calculus and Modelling	3	A HSC Mathematics Extension 2 or MATH 1001 N MATH 1013 or 1903 or 1907	Summer, Semester 2
SOFT 1001	Software Development 1	6	N May not be counted with SOFT 1901 or COMP (1001 or 1901)	Summer, Semester 1, Semester 2
SOFT 1002	Software Development 2	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) N May not be counted with SOFT 1902 or COMP (1002 or 1902)	Summer, Semester 1, Semester 2
Core Intermediate units of study				
COMP 2160	Data Structures	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) C MATH (1004 or 1904 or 2009 or 2011 or 2069 or 2969) N May not be counted with 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 INFO1000 level P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC N INFO (2000 or 2810 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 (2001 or 2004 or 2830).	Semester 2
Core Senior units of study				
MULT 3306	Multimedia Computing and Processing		NB: *** No info available for 2005. ***	
MULT 3307	Interactive Multimedia Systems		NB: *** No info available for 2005. ***	
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		NB: *** No info available for 2005. ***	
MATH 3007	Coding Theory	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902)	Semester 2
MATH 3010	Information Theory	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901 and some probability theory)	Semester 2
MATH 3019	Signal Processing	4	P MATH (2001 or 2901) and MATH (2005 or 2905) N May not be counted with MATH 3919	Semester 1
SOFT 3300	Software Development Project		NB: *** No info available for 2005. ***	
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	6	A Multimedia data formats, networking concepts, database concepts P Credit average in 24 credit points of 3000-level study	Semester 1
(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	N NETS2008 Computer System Organisation, NETS2908 Computer System Organisation (Adv), COMP2001 Computer Systems, COMP2901 Computer Systems (Adv).	Semester 1
SOFT 1001	Software Development 1	6	N May not be counted with SOFT 1901 or COMP (1001 or 1901)	Summer, Semester 1, Semester 2

3. Undergraduate tables and units of study

SOFT 1002	Software Development 2	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) N May not be counted with SOFT 1902 or COMP (1002 or 1902)	Summer, Semester 1, Semester 2
Core Intermediate units of study				
INFO 2110	Systems Analysis and Modelling	6	A Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO1000 level P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC N INFO (2000 or 2810 or 2900)	Semester 1
NETS 2150	Fundamentals of Networking	6	P ELEC1601 or SOFT (1001 or 1901) 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 (2001 or 2004 or 2830).	Semester 2
Core Senior units of study				
NETS 3303	Network Protocols & Programming		NB: *** No info available for 2005. ***	
NETS 3304	Operating System Internals		NB: *** No info available for 2005. ***	
NETS 3305	Computer and Network Security		NB: *** No info available for 2005. ***	
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		NB: *** No info available for 2005. ***	
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 ELEC1101 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 Communication Systems.	Semester 2

3. Undergraduate tables and units of study

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	6	A Understanding of link layer technologies, the TCP/IP protocol stack P Credit average in 24 credit points of 3000-level study N ELEC (4504 and 5501)	Semester 1
NETS 4041	Network-Based High Performance Computing	6	A Understanding of operating systems 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
(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	N May not be counted with SOFT 1901 or COMP (1001 or 1901)	Summer, Semester 1, Semester 2
SOFT 1002	Software Development 2	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) N May not be counted with SOFT 1902 or COMP (1002 or 1902)	Summer, 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)	Summer, Semester 2
Core Intermediate units of study				
SOFT 2130	Software Construction 1	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) N COMP (2004 or 2904) or SOFT (2001 or 2004 or 2830).	Semester 2
COMP 2160	Data Structures	6	P SOFT (1002 or 1902) or COMP (1002 or 1902) C MATH (1004 or 1904 or 2009 or 2011 or 2069 or 2969) N May not be counted with 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 INFO1000 level P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC N INFO (2000 or 2810 or 2900)	Semester 1
INFO 2120	Database Systems 1	6	A Basics of data modeling, experience working with information technology tools P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC N INFO (2005 or 2820 or 2905).	Semester 2
Core Senior units of study				
SOFT 3301	Software Construction 2		NB: *** No info available for 2005. ***	
SOFT 3302	Software Quality Assurance		NB: *** No info available for 2005. ***	
SOFT 3300	Software Development Project		NB: *** No info available for 2005. ***	
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

3. Undergraduate tables and units of study

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		NB: *** No info available for 2005. ***	
MULT 3307	Interactive Multimedia Systems		NB: *** No info available for 2005. ***	
NETS 3305	Computer and Network Security		NB: *** No info available for 2005. ***	
Elective Honours units of study				
EBUS 4001	e-Business Engineering	6	A EBUS3002 e-Commerce Website Programming or EBUS3004 e-Business Programming. N EBUS5001 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	6	A Relational database technology, object-oriented design, C++ P Credit average in 24 credit points of 3000-level study	Semester 1
(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	N NETS2008 Computer System Organisation, NETS2908 Computer System Organisation (Adv), COMP2001 Computer Systems, COMP2901 Computer Systems (Adv).	Semester 1
SOFT 1001	Software Development 1	6	N May not be counted with SOFT 1901 or COMP (1001 or 1901)	Summer, Semester 1, Semester 2
SOFT 1002	Software Development 2	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) N May not be counted with SOFT 1902 or COMP (1002 or 1902)	Summer, Semester 1, Semester 2
Core Intermediate units of study				
ELEC 2602	Digital System Design	6	A ELEC1101 Foundations of Computer Systems or ELEC1601 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 ISYS1003 or INFO1000 level P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC N INFO (2000 or 2810 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 (2001 or 2004 or 2830).	Semester 2
Core Senior units of study				
ELEC 3607	Embedded Computing	6	A ELEC1101 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 and Systems or ELEC 2302 Signals and Systems. N ELEC 3303 Digital Signal Processing.	Semester 1

3. Undergraduate tables and units of study

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 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		NB: *** No info available for 2005. ***	
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 Microprocessor 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 3016	Mathematical Computing I	4	P 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903 or 1906 or 1907. N May not be counted with MATH 3916.	Semester 1
COSC 3001	Scientific Computing	4	A Programming experience in MATLAB P 12 credit points chosen from Junior Mathematics and Statistics, 16 credit points of Intermediate units in Science subject areas. N COSC3901, PHYS3301, PHYS3901	Semester 1
COSC 3002	Parallel Computing and Visualisation	4	A Programming experience in C and MATLAB or equivalent P 12 credit points from the Science subject areas of Junior Mathematics and Statistics and 16 credit points of Intermediate units in Science subject areas. N COSC3601, COSC3902, PHYS3303, PHYS3933	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.				
BCHM 3005	Computational Biochemistry		NB: *** No info available for 2005. ***	

3. Undergraduate tables and units of study

BIOL 3023	Ecological Methods	6	P 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2002 or 2902 or 2004 or 2904) N BIOL3923, MARS3102 NB: The completion of 6 credit points of MBLG units is highly recommended.	Semester 2a
BIOL 3027	Bioinformatics and Genomics	6	P MBLG (2001 or 2101 or 2901) and MBLG (2002 or 2902) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. N BIOL3927 NB: A recommended unit of study for third year students enrolled in the BSc (Bioinformatics) degree. In 2006 the prerequisites will be: MBLG (2771 or 2871)	Semester 1b
BINF 3001	Bioinformatics Project	8	A 12 credit points from Junior units of study in Software Development (SOFT) and/or Computational Science (COSC) P SOFT (2004 or 2904) and 16 credit points from Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and Genetics and/or Pharmacology N May not be counted with COMP 3206 NB: MBLG2002/2902, BIOL3027/3927 and BCHM3908 are highly recommended.	Semester 2
COSC 3701	Computational Science Project	8	A Able to program in a standard language. P 16 credit points of intermediate level natural sciences plus at least one of COSC (1001 or 1901 or 1002 or 1902) or SOFT (1001 or 1901) or MATH (2003 or 2903) or PHYS (2001 or 2901 or 2002 or 2902)	Semester 2
GEOP 3201	Modelling Earth Processes		NB: *** No info available for 2005. ***	
MATH 3003	Ordinary Differential Equations	4	P 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2001 or 2901) N MATH3923	Semester 1
MATH 3018	Partial Differential Equations and Waves	4	P MATH (2001 or 2901) and MATH (2005 or 2905) N May not be counted with MATH 3921	Semester 1
MATH 3019	Signal Processing	4	P MATH (2001 or 2901) and MATH (2005 or 2905) N May not be counted with MATH 3919	Semester 1
MULT 3307	Interactive Multimedia Systems		NB: *** No info available for 2005. ***	
STAT 3002	Applied Linear Models	4	P STAT 2004 (or STAT 1022 for Arts students) and MATH (1002 or 1902). N May not be counted with STAT 3902	Semester 1
STAT 3003	Time Series Analysis	4	P STAT (2003 or 2903) N May not be counted with STAT3903	Semester 1
STAT 3004	Design of Experiments	4	A STAT3002 P STAT2004 (or STAT1022 for Arts students) and MATH (1002 or 1902) N STAT3904	Semester 2
(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 May not be taken as well as LNGS1004 or LNGS1005	Semester 1
SOFT 1001	Software Development 1	6	N May not be counted with SOFT 1901 or COMP (1001 or 1901)	Summer, Semester 1, Semester 2
SOFT 1002	Software Development 2	6	P SOFT (1001 or 1901) or COMP (1001 or 1901) N May not be counted with SOFT 1902 or COMP (1002 or 1902)	Summer, Semester 1, Semester 2
MATH 1004	Discrete Mathematics	3	A HSC Mathematics Extension 1 N MATH 1904 or MATH2011	Summer, Semester 2

3. Undergraduate tables and 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)	Summer, Semester 2
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) C MATH (1004 or 1904 or 2009 or 2011 or 2069 or 2969) N May not be counted with 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 INFO1000 level P ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC N INFO (2000 or 2810 or 2900)	Semester 1
LNGS 2001	Phonetics and Phonology	8	P One of LNGS1001, LNGS1004, LNGS1005 and one of LNGS1002, LNGS1003 N KRNS 2317 or KRNS 2318. NB: This unit is available as a des- ignated 'Advanced' unit to students enrolled in the BA (Advanced) de- gree program.	Semester 1
LNGS 2002	Syntax	8	P One of LNGS1001, LNGS1004, LNGS1005 and one of LNGS1002, LNGS1003 NB: This unit is available as a des- ignated 'Advanced' unit to students enrolled in the BA (Advanced) de- gree 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 (2001 or 2004 or 2830).	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
Core Senior units of study				
COMP 3308	Artificial Intelligence (Introduc- tion)		NB: *** No info available for 2005, ***	
LNGS 3026	Semantics and Pragmatics	8	P One of LNGS 2001, LNGS 2002, LNGS 2003, LNGS 2004 NB: Compulsory for Honours stu- dents; other students may select as an option. This unit is available as a designated 'Advanced' unit to students enrolled in the BA (Ad- vanced) degree program.	Semester 1
SOFT 3301	Software Construction 2		NB: *** No info available for 2005, ***	
Elective units of study				
Students are required to complete 4 credit points from the elective units, or other mutually exclusive units such as their Advanced equivalents.				
COMP 3309	Algorithms		NB: *** No info available for 2005, ***	
COMP 4046	Statistical Natural Language Pro- cessing	6	A Concepts of linguistics, element- ary statistics, AI techniques P Credit average in 24 credit points of 3000-level study	Semester 1
INFO 3404	Database Systems 2		NB: *** No info available for 2005, ***	
LNGS 2003	Functional Grammar and Discourse	8	P One of LNGS1002, ENGL1050, MECO1001, LNGS1001, LNGS1003, LNGS1004, LNGS1005	Semester 1
LNGS 2004	Discourse Analysis	8	P Two of LNGS1002, ENGL 1050, MECO1001, LNGS1001, LNGS1003, LNGS1004, LNGS1005, LNGS2003	Semester 2
MULT 3306	Multimedia Computing and Pro- cessing		NB: *** No info available for 2005, ***	
MULT 3307	Interactive Multimedia Systems		NB: *** No info available for 2005, ***	
SOFT 3302	Software Quality Assurance		NB: *** No info available for 2005, ***	
STAT 3005	Applied Stochastic Processes	4	P MATH (1003 or 1903 or 1907) and STAT (2001 or 2901) N STAT 3905	Semester 2

Table IV: Bachelor of Medical Science

Unit of Study		CP	A: Assumed knowledge P: Pre-requisites Q: Qualifying C: Corequisites N: Prohibition	Session
A. Junior units of study				
Candidates are required to enrol in and complete:				
(i) MBLG 1001;				
(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, BIOL2906 and BIOL2106 and IMMU2001.	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, BIOL2906 and BIOL2106 and IMMU2001.	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, BIOL2906 and BIOL2106 and IMMU2001.	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, BIOL2906 and BIOL2106 and IMMU2001.	Semester 1
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, BIOL2906 and BIOL2106 and IMMU2001.	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, BIOL2906 and BIOL2106 and IMMU2001.	Semester 2
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, BIOL2906 and BIOL2106 and IMMU2001.	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, BIOL2906 and BIOL2106 and IMMU2001.	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, 3928), Biochemistry, Cell Pathology, Immunology, Infectious Diseases, Microbiology, Pharmacology and Physiology. The units listed in the table below are 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.

ANAT 3005	Topographical Anatomy	12	P BMED (2101 and 2102) or 32 credit points of Intermediate BMED units including BMED (2503 and 2504 and 2505). N ANAT (3004 or 3008) NB: This unit of study is available to students enrolled in the Bachelor of Medical Science only. From 2006 the prerequisites will be: BMED (2101 and 2102) or 42 credit points of Intermediate BMED units including BMED (2503 and 2504 and 2505).	Semester 2
BMED 3003	Immunology	12	P 32 credit points of Intermediate BMED units including BMED 2506. N IMMU 3002.	Semester 2
BMED 3004	Infectious Diseases	12	P 32 credit points of Intermediate BMED units including BMED 2506.	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 enrolls 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
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. 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. Immunology Honours is available to approved students from any degree program. Intending candidates should contact the Department.	Semester 1, Semester 2
BMED 4012	Immunology Honours B	12	C BMED 4011 NB: Immunology Honours is available to approved students from any degree program. Intending candidates should contact the Department.	Semester 1, Semester 2
BMED 4013	Immunology Honours C	12	C BMED 4012 NB: Immunology Honours is available to approved students from any degree program. Intending candidates should contact the Department.	Semester 1, Semester 2
BMED 4014	Immunology Honours D	12	C BMED 4013 NB: Immunology Honours is available to approved students from any degree program. Intending candidates should contact the Department.	Semester 1, Semester 2

Infectious Diseases

BMED 4021	Infectious Diseases Honours A	12	NB: Department permission required for enrolment.	Semester 1, Semester 2

3. Undergraduate tables and units of study

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 1, Semester 2
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

Units of study descriptions

The units of study descriptions in this section generally are organised alphabetically by department or school, except for those listed below.

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.

Units of study descriptions

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. Dr Caldwell. **Session:** Semester 1. **Classes:** 3 lec/week and 33 hours of lab/semester. **Prerequisites:** 12 credit points of Junior Chemistry. **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. Dr 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. **Assessment:** One 2hr exam (50%), assignments (20%), laboratory (30%).

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. Dr 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. **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. Dr 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. **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. Prof Kennedy (Coordinator). **Session:** Semester 1. **Classes:** 6 day field trip in orientation week, 21 hr lec & 25 hr prac. **Prerequisites:** 6 credit points of either Intermediate Agricultural Chemistry, Chemistry, Biochemistry, Plant Science or Environmental Science. **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. Prof Kennedy (Coordinator). **Session:** Semester 2. **Classes:** 5-day field trip in AVCC common break; 21 hr lec and 30 hr prac and project/semester. **Prerequisites:** 6 credit points of either Intermediate Agricultural Chemistry, Chemistry, Biochem-

istry, Plant Science or Environmental Science. **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 and NO_x, 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 Science 2

6 credit points. Dr Cattle, Prof. McBratney, Dr Singh. **Session:** Semester 1. **Classes:** (3 lec & 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. **Session:** Semester 2. **Prerequisites:** SOIL2001 or GEOL (1002 or 2004) or GEOG1001 or ENVI2001.

SOIL 3001 **Environmental Soil Science A**

12 credit points. Prof. McBratney (Coordinator), Dr Cattle. **Session:** Semester 1. **Classes:** (3 lec, 1 tut & 6hr prac)/wk, 10 days in the field. **Prerequisites:** SOIL2001. **Assessment:** Two 2hr exams, field and prac reports, problem sets, mini-lectures. 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.

This unit of study covers physics and pedology.

Physics

The emphasis is to examine the quantitative aspects of soil physics particularly in relation to the transfer of energy, gas, water, solids and solutes in soil. Lecture and lab topics include heat flow, gas movement, soil water energetics, saturated and unsaturated flow of soil water, infiltration, solute movement, water and wind erosion as well as the fundamentals of numerical computer modelling of soil physical processes.

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

Pedology

The main part of this unit of study the pedological characterisation of a number of contrasting soil profiles sampled during the pre-semester field-trip. This 5-day field-trip is made 2 weeks prior to the beginning of the February semester and involves the study and sampling of soil through central and northern NSW. The methods of study include particle-size analysis and extraction of a fine-sand fraction for optical identification and quantification of the mineral species present. X-ray diffraction is used to identify the clay minerals and elucidate mineralogical transformations. Scanning electron microscopy is used to examine surface features and mineral composition. The unit of study includes a weathering study which traces the changes from a rock parent material up through the soil profile. Thin sections of the rock and profile are examined and the main features identified and quantified. The data from micromorphological investigations and clay mineral assessments are used to provide an understanding of the pedogenesis of the particular soil samples.

A detailed study, including exercises, is made of the USDA soil classification system, Soil Taxonomy, and the Australian Soil Classification.

Textbooks

Reference books:

FitzPatrick EA. Soils. Longman, 1980

FitzPatrick EA. Micromorphology of Soils. Chapman & Hall, 1984

Isbell RF. The Australian Soil Classification, CSIRO Publishing, 1996

Kirkman D, & Powers WL. Advanced Soil Physics. Wiley 1972

Loveday J (ed.). Methods for Analysis of Irrigated Soils. C.A.B., 1974

Richler J. The Soil as a Reactor. Catena Verlag, 1987

Young A & Young R Soils in the Australian Landscape. Oxford University Press, 2001

SOIL 3002 **Environmental Soil Science B**

12 credit points. Dr Singh, Prof. McBratney, Dr Cattle. **Session:** Semester 2. **Classes:** 3 lec, 1 tut & 8hr prac/wk. **Prerequisites:** SOIL2001; and AGCH2001 or CHEM (2001 or 2101 or 2202 or 2301 or 2302) or BCHM (2002 or 2902). **Assessment:** Two 2hr exams, lab reports, problem sets, essays.

This 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. This unit of study covers advanced soil chemistry and methods of soil analysis.

Soil Chemistry: The lecture topics include the structure and chemistry of inorganic components, surface charge of soil minerals, chemistry of soil organic matter, ion exchange, ion sorption, soil solution-solid phase equilibria and redox chemistry of soils.

Methods: Topics to be covered will include the use of algorithms and simulation modelling in soil science, techniques for soil structural assessment, techniques for dating the age of soil materials, and the use of electron microscopy and X-ray based techniques in soil

science. Practicals will involve the writing of computer programs for modelling applications, soil structural assessment of samples using image analysis, radiocarbon dating of field samples, and the use of electron microscopy and X-ray diffraction to identify soil constituents.

Textbooks

Reference books:

Evangelou V P Environmental Soils and Water Chemistry. John Wiley & Sons New York. 1998

Lindsay W L Chemical Equilibria in Soils. John Wiley & Sons New York. 1979

McBride M B Environmental Chemistry of Soils. Oxford University Press New York. 1994

Sparks D L Environmental Soil Chemistry. Academic Press London. 1995

Sposito G The Chemistry of Soils. Oxford University Press New York. 1989

SOIL 3008 **Rural Spatial Information Systems**

6 credit points. Dr Odeh. **Session:** Semester 2. **Classes:** 2 lec & 2hr prac/wk (wks 1-13), four-day field trip in AVCC common break. **Assessment:** One 2 hr exam, field excursion and lab prac reports, presentation and essay topic.

The lecture material will present several themes: i) Principles of Geographical Information Science (GISc): brief history of GISc, ontology and epistemology of spatial phenomena, basic Geographical Information Systems (GIS) structure, coordinate systems and map projections and datums; ii) Fundamentals of remote sensing and geo-image analysis; iii) Geospatial data sources and acquisition methods, including existing maps and their digitisation, remote sensing images, digital elevation models (DEM) and global positioning systems (GPSs); iv) Processing of geospatial data: spatial data in the computer, building and accessing an entity in the database and continuous fields, data analysis using entities and continuous fields for decision support, etc.; v) Spatial statistics: quality of spatial data, spatial analysis of geospatial data, geostatistics, introduction to spatial-temporal modelling. Software packages for geographical information systems will be reviewed.

Practical exercises will focus on applications to land-cover assessment, subcatchment and regional hydrology, and soil quality assessment for decisions regarding sustainable rural land use planning and management. Two of the 4 days of the mid-Semester field excursion will be spent in Canberra visiting various government agencies which research and maintain GIS coverages of major rural environments. The remaining fieldwork will be at University farms at Camden or Arthursleigh, and will involve training in the field use of low and high-resolution GPS for geo-rectification, for ground truthing satellite-derived land cover maps and for the creation of digital elevation models and landform attributes.

Textbooks

Burrough PA, McDonnell RA. Principles of Geographic Information Systems. Oxford University Press, 2000

Clarke KC. Getting started with geographic information systems. Prentice Hall, 2003.

Lillesand T, Kiefer RW. Remote Sensing and Image Interpretation. John Wiley & Sons Inc. 1999.

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.

ANAT 2008 Principles of Histology

6 credit points. 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. **Assessment:** 1hr theory exam, 1 hr practical exam, 4 quizzes.

NB: The completion of 6 credit points of MBLG units of study is highly recommended. 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, Kaye, G.I., and W. Paulina (2003) Histology - A Text and Atlas, 4th Edition, Lippincott Williams and Wilkins, New York.

Department of Anatomy and Histology, Principles of Histology, Practical Book (consult Department)

ANAT 2009 Comparative Primate Anatomy

6 credit points. Dr Denise Donlon. **Session:** Semester 2. **Classes:** 2 lects, 1 2hr prac/wk, museum project. **Assumed Knowledge:** Knowledge of basic vertebrate biology. **Prerequisites:** 12 credit points of Junior Biology or Junior Psychology or Junior Archaeology. **Assessment:** One 1 hour theory exam, one 30 min prac exam, two quizzes, one 2000 word essay.

NB: The completion of 6 credit points of MBLG units of study is highly recommended. 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. Dr Karen Cullen. **Session:** Semester 2. **Classes:** 2 lects, 2hr prac/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). **Assessment:** One 2 hr exam, 2000word essay, prac reports, prac test.

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

John Nolte The Human Brain: An Introduction to its Functional Anatomy. (2002) Mosby.

Kiernan, Barr's: The Human Nervous System. (1998)

ANAT 3001 Microscopy and Histochemistry

12 credit points. Prof Chris Murphy, Ms R Arnold. **Session:** Semester 1. **Classes:** 4hr lec & 8hr lab/wk. **Prerequisites:** ANAT 2001. For BMedSc students: 32 credit points of Intermediate BMED units including BMED (2503, 2504, and 2505). **Assessment:** 3hr theory exam, 1hr prac exam, practical reports and/or essays.

NB: From 2006 the prerequisites will be: ANAT2008 For BMedSc students, 42 credit points of Intermediate BMED units including BMED (2803, 2804, 2805).

The aims of the unit of study are to provide understanding of why biological tissues need to be specially prepared for microscopic examination, how differing processing methods can yield different types of morphological information; to allow students to understand different types and modalities of microscopes, how they function and the differing information they can provide; to develop an understanding of why biological material needs to be stained for microscopic examination; to allow students to understand how biological material becomes stained; to develop understanding of the chemical information provided by biological staining methods and allow students to develop skills in diverse histochemical staining procedures -- dyes, enzymes and antibodies.

Textbooks

Kiernan, JA. Histological and Histochemical Methods (3rd edn), Butterworth, 1999.

ANAT 3002 Cells and Development

12 credit points. Dr Frank Lovicu. **Session:** Semester 2. **Classes:** 12hr/wk. **Assumed Knowledge:** (i) an understanding of the basic structure of vertebrates; (ii) an understanding of basic biochemistry and genetics. **Prerequisites:** ANAT2001. For BMedSc students: 32 credit points of Intermediate BMED units including BMED (2502, 2503, 2504, and 2505). **Assessment:** Theory exam and practical assignments.

NB: From 2006 the prerequisites will be: ANAT2008 or ANAT2011 and MBLG (2771 or 2871). For BMedSc students, 42 credit points of intermediate BMED units including BMED (2802, 2803, 2804, 2806).

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 examined in a range of animals, mainly vertebrates. The parts played by inductive cell and tissue interactions in differentiation, morphogenesis and pattern formation are studied at cellular and molecular levels. The unit of study also covers the design of experimental procedures using appropriate molecular and cellular techniques to answer developmental questions.

Textbooks

Gilbert SF. Developmental Biology. (7th edn) Sinauer Associates Inc: Sunderland, Mass. 2003

ANAT 3003 Transmission & Scanning Electron Microsc

12 credit points. Dr M. Anne Swan, Dr Allan Jones. **Session:** Semester 2. **Classes:** 4 hrs lec & 8 hrs lab/wk. **Prerequisites:** ANAT2001. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2503, 2504 & 2505). **Assessment:** 2x2hr theory exams, practical reports and a project.

NB: The completion of 6 credit points of MBLG units of study is highly recommended. From 2006 the prerequisites will be: For BMedSc students 42 credit points of Intermediate BMED units including BMED (2803, 2804 & 2805).

The course is run jointly by the Department of Anatomy & Histology and the Electron Microscope Unit. The course will provide training in the theory and practice of operating 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 undertake research and apply their knowledge to complete a project on electron microscopy of a biological sample. Students will also receive theoretical and practical training in laser scanning confocal microscopy including the use of fluorescent probes to visualise cell organelles and cellular processes.

Textbooks

Bozzola JJ and Russell LD. Electron Microscopy (2nd Ed.), Jones and Bartlett Publishers, 1999.

Reference book:

John C. Russ. The Image Processing Handbook (3rd Ed), CRC Press, 1998.

ANAT 3004 Cranial and Cervical Anatomy

6 credit points. Ms Robin Arnold. **Session:** Semester 2. **Classes:** 1 lec, 2hr dissection, 3hr prac/tut. **Prerequisites:** ANAT2002. **Assessment:** One 1.5hr theory exam, one 1hr prac exam, one 2500 word essay, continuous assessment (10%).

NB: Not more than 12 credit points allowed from ANAT3004, ANAT3007 & ANAT3008. The completion of 6 credit points of MBLG is highly recommended. From 2006 the prerequisite will be: ANAT2009

This unit of study covers skull, muscles of facial expression, muscles of jaw and neck, ear, eye, nose, oral cavity and larynx and pharynx

3. Undergraduate tables and units of study

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. Dissection classes enable 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 Clemente, C.O. A Regional Atlas of the Human Body. Williams and Wilkins.

ANAT 3005 Topographical Anatomy

12 credit points. Dr Robin Arnold. **Session:** Semester 2. **Classes:** 3 lec & 9 tut or prac/wk. **Prerequisites:** BMED (2101 and 2102) or 32 credit points of Intermediate BMED units including BMED (2503 and 2504 and 2505). **Assessment:** One 3hr exam, one prac exam, one 2500w essay.

NB: This unit of study is available to students enrolled in the Bachelor of Medical Science only. From 2006 the prerequisites will be: BMED (2101 and 2102) or 42 credit points of Intermediate BMED units including BMED (2503 and 2504 and 2505).

This unit of study comprises two strands of topographical anatomy -- head and neck anatomy and musculo-skeletal anatomy. The anatomy of the head and neck region will be studied in one lecture, one tutorial and one dissection class per week. The unit of study includes study of the human skull and upper vertebral column and the associated musculatures; the anatomy and functional anatomy of the eye, ear, nose and sinuses; larynx and pharynx are also covered. Emphasis is given to the composition and distribution of the twelve cranial nerves. Musculoskeletal anatomy is covered in two lectures and two tutorials/practical sessions per week. The musculoskeletal system of the trunk and lower limb is studied with particular reference to posture and locomotion. This is contrasted with the structural specialisation of the upper limb for its manipulative and tactile functions.

Textbooks

Mackinnon and Morris. Oxford Textbook of Functional Anatomy, Vol 3: Head & Neck. Oxford University Press. 1990
Clemente, C.O. A Regional Atlas of the Human Body. Williams and Wilkins.

ANAT 3006 Forensic Osteology

6 credit points. Dr Denise Donlon. **Session:** Semester 1. **Classes:** 2 lec, 2hr tut & 2hr prac/week. **Assumed Knowledge:** Understanding of basic human musculoskeletal anatomy. **Prerequisites:** Credit in ANAT2002. **Assessment:** 1hr theory exam, 1/2 hr prac exam, continuous assessment, case study.

NB: The completion of 6 credit points of MBLG is highly recommended. From 2006 the prerequisite will be: at least Credit level in ANAT2009.

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

Bass WM. Human Osteology: A laboratory and field manual. 4th edition. Missouri Archaeological Society: Missouri, 1995.

ANAT 3007 Visceral Anatomy

6 credit points. Ms R Arnold. **Session:** Semester 1. **Classes:** 2hrs lec & 4hrs prac/wk. **Assumed Knowledge:** Some knowledge of basic mammalian biology. **Prerequisites:** ANAT (2002 or 2003) or 32 credit points of Intermediate BMED units including BMED (2503, 2504 and 2505). **Assessment:** One 1.5hr theory exam, one 1hr prac exam, one 1200 word essay.

NB: Not more than 12 credit points allowed from ANAT3004, ANAT3007 & ANAT3008. From 2006 the prerequisites will be: ANAT2009 or ANAT2010 or any 42 credit points of Intermediate BMED units including BMED (2803, 2804 and 2805).

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.

ANAT 3008 Musculoskeletal Anatomy

6 credit points. Dr R Ward. **Session:** Semester 2. **Classes:** 2 lec, 2 x 2 hr tut/prac/wk. **Assumed Knowledge:** Some knowledge of basic mammalian biology. **Prerequisites:** ANAT2002. **Assessment:** One assignment, 1hr prac exam, 1.5hr theory exam.

NB: Not more than 12 credit points allowed from ANAT3004, ANAT3007 and ANAT3008. From 2006 the prerequisites will be: ANAT2009.

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.

Textbooks

Mackinnon and Morris. Oxford Textbook of Functional Anatomy, Vol. 1 (Musculoskeletal). Oxford University Press. 1990

Clemente, C.O. A Regional Atlas of the Human Body. Williams and Wilkins

Anatomy 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.

Histology Honours and Graduate Diploma

Histology Honours may be taken by students who have completed, to the required standard, at least one of the Senior semester units of study in Histology offered by the Department of Anatomy and Histology. Students who have taken only one of the semester units of study may be restricted to particular Honours projects that are related to that unit of study.

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 students from an intermediate level. This includes the fundamental principles governing the structure, function and interactions of biological molecules and leads to an understanding of the molecular nature of living systems.

The comprehensive Intermediate program in biochemistry includes Protein Biochemistry (BCHM 2071 - 6 credit points), Human Biochemistry (BCHM 2072 - 6 credit points) and a faculty unit of study Molecular Biology & Genetics A (MBLG 2771 - 6 credit points). For those students who have not completed Junior Biology but have completed 12 credit points of Junior Chemistry the combination of BCHM 2071 and MBLG 2771 allows students to enter the Biochemistry program and progress to the Senior units of study. For those students who have completed both Junior Biology and Chemistry, MBLG 2771 and BCHM 2072, constitute a basic Intermediate program in Biochemistry which also leads to the Senior units of study. The Senior program consists of Molecular Biology and Structural Biochemistry (BCHM 3001 - 12 credit points), Functional Genomics and Proteomics (BCHM 3098 - 6 credit points) and Cellular and Medical Biochemistry (BCHM 3002 - 12 credit points). Taken together the combination of BCHM 3001 and BCHM 3002 constitute a major in Biochemistry. In addition BCHM 3098 links core biochemistry to recent innovations in biomedical science and biotechnology. Advanced units of study based on four one-semester units of study, MBLG 2871, BCHM 2972, BCHM 3901 and BCHM 3902 are available to qualified students. The units of study BCHM 3004 and 3904 are only available to students in the Bachelor of Science (Molecular Biology and Genetics) degree and students seeking further information should consult the relevant Tables earlier in this chapter as well as degree information in chapter 2 of this handbook.

Advice on units of study

Students are strongly advised to discuss unit of study choices with members of staff present among faculty advisers during the enrolment period. This applies even to students enrolling in Junior units of study and who are contemplating taking Biochemistry in a subsequent year. Certain Junior units of study are recommended depending upon the related area of Biochemistry in which a student may wish to study in their Senior year. School advisers listed in the handbook should be consulted during the period prior to enrolment and during orientation.

Summer School

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/

Biochemistry Intermediate units of study

BCHM 2002 Molecules, Metabolism and Cells

8 credit points. A/Prof Denyer, Dr Hancock, Biochemistry staff. **Session:** Summer. **Classes:** 3 lec & 5 prac/wk & voluntary tutorials. **Prerequisites:** MBLG (2001 or 2901). **Assessment:** One 3hr exam, one 2hr theory of prac exam, prac tasks.

This unit of study aims to describe how cells work at the molecular level. The chemical reactions which occur inside cells is described in the first series of lectures, Cellular Metabolism. Aspects of the molecular architecture of cells which enable them to function and communicate are described in the second half of the unit of study, Molecular Aspects of Cell Biology. At every stage the unit of study relates how the function of each individual cell is coordinated and integrated with other cells, especially in humans.

Cellular Metabolism: How cells extract energy from fuel molecules like fatty acids and carbohydrates. The regulation of energy metabolism. How the body selects which fuels to use under different circumstances such as starvation and exercise. The metabolic inter-relationships of the muscle, brain, adipose tissue and liver. The role of hormones in coordinating the regulation of fuel utilisation and the mobilisation of fuel stores. How cells lay down stores of fuels. The synthesis and storage of fat and carbohydrate. The digestion of fats, starches and sugars and the use of ingested materials to make new cellular components. Synthesis and use of biochemical building blocks. The strategies and mechanisms involved in biochemical reactions and the involvement of coenzymes and vitamins in biological inter-conversions.

Molecular Aspects of Cell Biology: Sub-cellular engineering; cytoskeleton and molecular motors. Intracellular motion and the mechanism of muscle contraction. Cell membranes and cell walls. Transport across cell membranes. Communication between cells via cell surface receptors. The molecular mechanism of hormone action and the transduction of cellular signals.

Textbooks

Garrett RH & Grisham CM. Biochemistry. Saunders 1999 Resource Manual for Biochemistry 2 Practical Sessions, Sem 2 Study Resource for Biochemistry 2002 (Study Guides and Past Papers)

BCHM 2102 Molecules, Metabolism and Cells Theory

4 credit points. A/Prof Denyer, Dr Hancock, Biochemistry staff. **Session:** Summer. **Classes:** 3 lec/wk. **Prerequisites:** MBLG (2001 or 2101 or 2901). **Assessment:** One 3hr exam.

This unit of study comprises just the lecture component of BCHM 2002.

Textbooks

Garrett RH & Grisham CM. Biochemistry. Saunders 1999 Study Resource for Biochemistry 2002 (Study Guides and Past Papers)

BCHM 2071 Protein Biochemistry

6 credit points. 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. **Corequisites:** Recommended concurrent units of study: MBLG (2771 or 2871) for progression to Senior Biochemistry, and/or Intermediate Chemistry. **Assessment:** One 2hr theory exam, a 1hr theory of practical exam, 2 prac reports.

NB: The completion of 6 credit points of MBLG units of study is highly recommended. From 2006, MBLG1001 will be an additional prerequisite.

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 complements the protein science presented in MBLG2771 and BCHM2072 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. Cornely, 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. Dr Charles Collyer. **Session:** Semester 1. **Classes:** 2 lec, 1 tut/fortnight, 4 hr prac/fortnight. **Prerequisites:** Distinction in 12 credit points of Junior Chemistry. **Assessment:** One 2hr theory exam, one 1hr theory of practical exam, 2 prac reports.

NB: The completion of 6 credit points of MBLG is highly recommended.

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 complements the protein science presented in MBLG2071 and BCHM2072 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. Cornely, Essential Biochemistry (John Wiley & Sons, 2004) and the

Resource Manual for Biochemistry 2 Practical Sessions, Sem 1

BCHM 2072 Human Biochemistry

6 credit points. A/Prof Gareth Denyer. **Session:** Semester 2. **Classes:** 2 lec, 1 tut/wk, 4 prac/alternate wk. **Prerequisites:** MBLG1001 or (6 credit points of Junior Biology or MBLG2771 or MBLG2871 for enrolments in 2005 only) and 12 credit points of Junior Chemistry. **Assessment:** One 2 h theory exam, one 1 h theory of practical exam, practical reports, optional take-home assignments.

NB: From 2006, the prerequisites will be MBLG1001 and 12 credit points of Junior Chemistry. The completion of 6 credit points of MBLG units of study is highly recommended.

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 effects of diet on the constituents of urine, the diagnosis of chronic disease using blood/tissue enzyme patterns, 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.

Textbooks

Metabolic Regulation: A Human Perspective by Keith Frayn (Blackwell Publishers) 2nd edition, 2003

Reference

C.W. Pratt & K. Cornely, Essential Biochemistry (John Wiley & Sons, 2004)

BCHM 2972 Human Biochemistry (Advanced)

6 credit points. A/Prof Gareth Denyer. **Session:** Semester 2. **Classes:** 2 lec, 1 tut/wk, 4 practicals in alternate weeks. **Prerequisites:** MBLG1001 or (6 credit points of Junior Biology or MBLG2771 or MBLG2871 for enrolments in 2005 only) and 12 credit points of Junior Chemistry). Entry also requires a Distinction in two of the prerequisite units of study. **Assessment:** One 2 h theory exam, one 1 h theory of practical exam, practical reports, optional take-home assignments.

NB: The completion of 6 credit points of MBLG units of study is highly recommended. From 2006, the prerequisites will be Distinction in BCHM (2071 or 2971) or (Distinction in MBLG1001 and Distinction in 12 credit points of Junior Chemistry).

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 coordin-

3. Undergraduate tables and units of study

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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 effects of diet on the constituents of urine, the diagnosis of chronic disease using blood/tissue enzyme patterns, 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

Textbooks

Metabolic Regulation: A Human Perspective by Keith Frayn (Blackwell Publishers) 2nd edition, 2003

Reference

C.W. Pratt & K. Cornely, Essential Biochemistry (John Wiley & Sons, 2004)

Biochemistry Senior units of study

BCHM 3001 Mol Biology and Structural Biochemistry

12 credit points. Mrs Jill Johnston, Dr Simon Easterbrook-Smith, Biochemistry staff. **Session:** Semester 1. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** A total of at least 16 credit points of Intermediate MBLG and BCHM units. For BMedSc students: 32 credit points of Intermediate BMED units including BMED (2501, 2502 and 2504). **Assessment:** One 3hr exam, one 2hr exam, prac work.

NB: From 2006 the prerequisites will be: (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units

This unit of study is designed to build on the units of study MBLG 2001 and BCHM 2002. It provides comprehensive training in molecular biology (with emphasis on eukaryotic systems) and structural biochemistry.

The lectures are divided into two topic areas. The Molecular Biology section provides a thorough description of modern molecular biology, particularly the molecular basis of cell cycle control, the biochemistry of apoptosis, proteins that mediate gene expression, investigating promoter activity and enhancer action, the biochemical basis of differentiation of eukaryotic cells, the molecular basis of imprinting, the role of RNA in gene expression and molecular techniques for understanding regulation. The Structural Biochemistry section addresses the important areas of protein structure and protein folding in vivo, ligand binding, macromolecular interactions and examples of structure based drug design.

The practical component is designed to complement the lecture series and to provide students with experience in a wide range of techniques used in molecular biology and protein biochemistry laboratories.

Textbooks

Lewin B. Genes VII. Pearson Prentice Hall. 2004

Branden C. and Tooze J. Introduction to Protein Structure. 2nd edition, 1999, Garland

BCHM 3002 Cellular and Medical Biochemistry

12 credit points. Mrs Jill Johnston, Dr Simon Easterbrook-Smith, Biochemistry staff. **Session:** Semester 2. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** A total of at least 16 credit points of Intermediate MBLG and BCHM units. For BMedSc students 32 credit points of Intermediate BMED units including BMED (2501, 2502 and 2504). **Assessment:** One 3hr exam, one 2hr exam, prac work.

NB: From 2006 the prerequisites will be: (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units

This unit of study is designed to build on the units of study MBLG 2001 and BCHM 2002. It involves the integration of basic knowledge in Biochemistry and Molecular Biology to give an understanding at the molecular level, of the function of cells and the body as a whole.

The lectures are divided into several areas including: signal transduction and the molecular basis of cell:cell interactions, the biochemistry of membrane transport, phagocytosis and receptormediated endocytosis, protein trafficking in eukaryotic cells, molecular immunology and its applications to cellular biochemistry, medical molecular biology, and links between intermediary metabolism and cellular biochemistry The biochemical basis of some diseases, especially cancer and diabetes, will be used to illustrate many of these topics.

Practical: The practical component is designed to complement the lecture series and to provide students with experience in a wide range of techniques used in modern biochemistry laboratories. Practical classes run for an average of 8 hours over 2 days. Students are alloc-

ated to the Monday/Tuesday class or to the Wednesday/Thursday class according to their other subjects.

Textbooks

Cooper GM. The Cell: A Molecular Approach. ASM Press, 2004

BCHM 3005 Computational Biochemistry

*** No info available for 2005. ***

BCHM 3098 Functional Genomics and Proteomics

6 credit points. Dr K Downard. **Session:** Semester 1. **Classes:** 3 lec & 1 tut/wk, and workshops and/or major assignments. **Assumed Knowledge:** BCHM2011. **Prerequisites:** MBLG (2001 or 2901) or at least 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). **Assessment:** One 2 hour theory exam and assignments.

NB: This unit of study is a requirement for all molecular biotechnology third-year students and recommended to all students majoring in biochemistry or enrolled in BSc (Bioinformatics) degrees.

This unit of study will introduce students to the emerging fields of functional genomics and proteomics and will focus on principles and methodologies associated with mapping of genomes, understanding gene function and expression, and identifying the sequence, structure and function of the proteins that these genes express. The course consists of four sections or modules on Functional Genomics, Proteomics and Bioinformatics, Structural Genomics, and Protein Modelling. Each section or module comprises approximately 8 lectures, tutorials and one-day workshop or assignment. The following areas are covered: mapping and sequencing of the human genome, complexity of the human genome compared to prokaryotes, protein expression in eukaryotes and prokaryotes, levels and implications for proteome analysis, introduction to functional genomics, Rosetta stone concept, gene technology including expressed sequence tags, serial analysis gene expression (SAGE), microbead technology, cDNA and oligonucleotide microarrays, mutagenesis screens, two and three-hybrid screening, global versus functional proteomics, protein recovery from cells and tissues, platforms and technologies for automated protein identification and quantitation, two-dimensional gel electrophoresis, visualisation methods, robotic gel excision and blotting, mass spectrometry, mass maps and sequence tags, tandem mass spectrometry and protein sequencing, automation and sample handling, membranes and other supports, protein microarrays and protein chips, genome and protein databases, HTML and other Web based languages, tools for sequence identification and alignment, scoring factors, experimental methods used in structural genomics - xray and nmr spectroscopy, protein structure prediction, homology and other modelling methods

Textbooks

Gibson and Muse, A Primer in Genome Science, Sinauer Associates Inc., 2002

Wilkins MR, Williams KL, Appel RD, Hochstrasser DF (eds.) Proteome Research - New Frontiers in Functional Genomics, Springer-Verlag 1997.

BCHM 3901 Mol Biology and Structural Biochem (Adv)

12 credit points. Mrs Jill Johnston, Dr Simon Easterbrook-Smith, Biochemistry staff. **Session:** Semester 1. **Classes:** 4 lec & 8 prac/wk & 4 seminars. **Prerequisites:** Distinction in a total of at least 16 credit points from Intermediate MBLG and BCHM units. For BMedSc students: 32 credit points of Intermediate BMED units including Distinctions in BMED (2501, 2502 and 2504). **Assessment:** One 3hr exam, one 2hr exam, assignment, prac work.

NB: From 2006 the prerequisites will be: Distinctions in (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units

The lecture and practical components of this unit of study are the same as for BCHM 3001. Qualified students will attend seminars/practical classes related to the topics covered in the core lectures in this unit of study.

Textbooks

Lewin B. Genes VII, Pearson Prentice Hall. 2004

Branden C. and Tooze J. Introduction to Protein Structure. 2nd edition, 1999, Garland.

BCHM 3902 Cellular and Medical Biochemistry (Adv)

12 credit points. Mrs Jill Johnston, Dr Simon Easterbrook-Smith, Biochemistry staff. **Session:** Semester 2. **Classes:** 4 lec & 8 prac/wk & 4 seminars. **Prerequisites:** Distinction in a total of at least 16 credit points from Intermediate MBLG and BCHM units. For BMedSc students: 32 credit points of Intermediate BMED units including Distinctions in BMED (2501, 2502 and 2504). **Assessment:** One 3hr exam, one 2hr exam, assignment, prac work.

NB: From 2006 the prerequisites will be: Distinctions in (12 credit points of Intermediate Biochemistry and MBLG1001) or (MBLG2771/2871 and (6 credit points of Intermediate Biochemistry or MBLG2072/2972)) or all core Intermediate BMedSc units

The lecture and practical components of this units of study are the same as for BCHM3002. Qualified students will attend seminars/practical classes related to the topics covered in the core lectures in this unit of study.

Textbooks

Cooper GM. The Cell: A Molecular Approach. ASM Press. 2004

BCHM 3905 Computational Biochemistry (Advanced)

*** No info available for 2005. ***

Biochemistry Honours

Dr Crossley, 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 cause of diabetes and/or obesity
- Structure and function of clusterin, a molecular chaperonin
- X-ray crystallography of proteins and drug DNA complexes
- Metabolic pathways in boar spermatozoa
- NMR studies of the solution structure of DNA binding proteins
- NMR studies of membrane transport and metabolism in cells
- Eukaryotic transcription factors
- Bioavailability of trace elements and biochemical indicators of their nutritional status
- The effect of fibre on blood and urinary estrogens
- Proteomics
- Bioinformatics
- Protein structure modeling
- Mass Spectroscopy
- Genomics
- Chromosome replication and cell division in bacteria
- Molecular biology of humans and yeasts
- Gene expression in transgenic mice
- Nutrition and cardiovascular risk factors
- Effects of dietary fatty acids on platelet function
- 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 and 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 BIOL3027/3927 (Bioinformatics and Genomics) and BCHM3098 (Functional Genomics and Proteomics). Furthermore, the students complete a unit of study - BINF 3001 (Bioinformatics Project) - that is designed specifically to give them an opportunity to do real research, supervised by scientists from the bio-medical disciplines.

BINF 3001 Bioinformatics Project

8 credit points. Dr Jermin, A/Prof Spence. **Session:** Semester 2. **Classes:** 1 hr meeting with supervisor and 7hr project work/wk; 3-4 introductory lectures given by supervisor. **Assumed Knowledge:** 12 credit points from Junior units of study in Software Development (SOFT) and/or Computational Science (COSC). **Prerequisites:** SOFT (2004 or 2904) and 16 credit points from Intermediate Biology, Biochemistry, Microbiology, Molecular Biology and Genetics and/or Pharmacology. **Assessment:** Quality of proposal (10%), application (50%), and report (40%). The assessment is done at a group level (groups comprise several students) for quality of proposal and application, and at the individual level for the report.

NB: MBLG2002/2902, BIOL3027/3927 and BCHM3908 are highly recommended.

This unit of study is building on a real-case scenario involving an IT company and its clients, employers and employees. The client (ie a university researcher with an interest in bioinformatics) contacts the company with the aim to obtain a bioinformatics application that will assist him/her in the pursuit of new avenues of research and service provision. Terms of reference are drafted with the project managers (ie the academics responsible for the unit of study) of the IT company, and are then presented to a small group of employees (ie the students), who design and implement a plan of how to write and deliver the software.

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 Carlaw. Students can make appointments by signing the form on the door of the offices of members of the academic staff members. Students are strongly advised to get acquainted with the staff and to use this service.

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

BIOL 1001 Concepts in Biology

6 credit points. **Session:** Summer, Semester 1. **Classes:** 3 lec & usually 3 hrs prac/wk. **Assumed Knowledge:** No previous knowledge required. Students who have not taken

3. Undergraduate tables and units of study

HSC Biology are recommended to take the Biology Bridging Course. **Assessment:** One 2.5hr exam, assignments, classwork.

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 et al. Biology. McGraw-Hill, 3rd ed, 2005.

A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of semester.

BIOL 1101 Biology - Ecosystems to Genes

6 credit points. **Session:** Semester 1. **Classes:** 3 lec & 3 hrs. prac/wk. **Prerequisites:** HSC 2-unit Biology or equivalent. **Assessment:** One 2.5hr exam, assignments, classwork. **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 a satisfactory prior knowledge of the HSC 2-unit Biology course. A brief revision of the basic concepts of the high school course is given. Biology - Ecosystems to Genes builds on the main themes introduced in HSC Biology to provide a background to the breadth of biology, including genetics of organisms, theories of evolution/origins of diversity of modern organisms, diversity of microorganisms, cell biology with emphasis on how cells obtain and use energy, modern molecular biology and interactions between organisms in biological communities. It is recommended that BIOL (1001 or 1101 or 1901) be taken before all other Junior units of study in Biology.

Textbooks

Knox R B et al. Biology. McGraw-Hill, 2nd ed, 2001

BIOL 1901 Biology - Ecosystems to Genes (Advanced)

6 credit points. **Session:** Semester 1. **Classes:** 3 lec & 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. **Assessment:** One 2.5hr exam, assignments, classwork.

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 is a more demanding alternative component of Biology - Ecosystems to Genes.

BIOL 1002 Living Systems

6 credit points. **Session:** Semester 2. **Classes:** (3 lec & 2 hrs prac)/wk. **AssumedKnowledge:** HSC 2-unit Biology. Students who have not undertaken an HSC biology course are strongly advised to complete a biology bridging course before lectures commence. **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 introduced. 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 et al. Biology. McGraw-Hill, 3rd ed, 2005.

A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of semester.

BIOL 1902 Living Systems (Advanced)

6 credit points. **Session:** Semester 2. **Classes:** (3 lec & 2 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. **Assessment:** One 2.5hr exam, assignments, classwork, independent project.

NB: Department permission required for enrolment.

This unit of study is a more demanding alternative component of Living Systems.

BIOL 1003 Human Biology

6 credit points. **Session:** Summer, Semester 2. **Classes:** (2 lec, 1 session independent study & 3 prac)/wk. **AssumedKnowledge:** HSC 2-unit Biology. **Assessment:** One 2.5hr exam, assignment, classwork.

This 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 the cells, control of body functions and defence mechanisms. After discussion of reproduction and development, it concludes with some modern studies and research 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 (2001 or 2002 or 2003 and 2004) 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 Book Company, (Australia), Pty Ltd.

Plus - Chapters 19, 20 and 21 from Benjamin C.L., Garman G.R. and Funston J.H. (1997) Human Biology, McGraw-Hill, which will be produced and shrink-wrapped with Seeley, et al.

A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of Semester.

BIOL 1903 Human Biology (Advanced)

6 credit points. **Session:** Semester 2. **Classes:** 2 lec, 1 session independent study & 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. **Assessment:** One 2.5hr exam, assignment, classwork.

NB: Department permission required for enrolment.

This unit of study is a more demanding alternative component of Human Biology.

Textbooks

Seeley, R., Stephens, T.D. & Tate, P. (2005) Essentials of Human Anatomy and Physiology, McGraw Hill Book Company, (Australia), Pty Ltd.

Plus - Chapters 19, 20 and 21 from Benjamin C.L., Garman G.R. and Funston J.H. (1997) Human Biology, McGraw-Hill, which will be produced and shrink-wrapped with Seeley, et al.

A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of Semester

BIOL 1904 Living Systems Molecular (Advanced)

6 credit points. **Session:** Semester 2. **Classes:** (3 lec & 2hrs prac)/wk. **AssumedKnowledge:** HSC 2-unit Biology or BIOL1901 or equivalent. **Assessment:** One 2.5hr exam, assignments, classwork, independent project.

NB: This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) only.

This unit of study is the same as BIOL1902 except for the addition of 5 special molecular biology and genetics discussion sessions, which consist of topical seminars and discussions in this discipline. An essay based on these discussions can be included as part of the assessment of the unit of study.

BIOL 1905 Human Biology Molecular (Advanced)

6 credit points. **Session:** Semester 2. **Classes:** 2 lec, 1 session independent study & 3hr prac/wk, & 5 discussion sessions. **AssumedKnowledge:** HSC 2-unit Biology or BIOL1901 or equivalent. **Assessment:** One 2.5hr exam, assignments, classwork and an assignment based on discussion sessions.

NB: This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) only.

This unit of study is the same as BIOL1903 except for the addition of 5 special molecular biology and genetics discussion sessions, which consist of topical seminars and discussions in this discipline. An essay based on these discussions can be included as part of the assessment of the unit of study.

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 (2771 or 2871) 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 (2771 or 2871) is a prerequisite for students wishing to enrol in MBLG (2072 or 2972). See entry for MBLG 2771, 2871, 2072 and 2972 under the heading Molecular Biology and Genetics.

From 2005, Plant Science (PLNT) units will replace certain BIOL units.

The following Intermediate units of study are offered:

February Semester

Group 1

- BIOL 2011 Invertebrate Zoology
- BIOL 2911 Invertebrate Zoology (Advanced)

Group 6

- BIOL 2016 Cell Biology
- BIOL 2916 Cell Biology (Advanced)

Group 3

- 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)

July Semester

Group 2

- BIOL 2012 Vertebrates and their Origins
- BIOL 2912 Vertebrates and their Origins (Advanced)

Group 4

- PLNT 2003 Plant Form and Function
- PLNT 2903 Plant Form and Function (Advanced)

Group 5

- MBLG 2072 Molecular Biology and Genetics B
- MBLG 2972 Molecular Biology and Genetics B (Advanced)

Group 7

- BIOL 2017 Entomology

Not more than one unit of study may be taken from each group. Qualifying units of study for certain Senior Biology units of study are defined as combinations of 6 credit points 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. Dr E L May, A/Prof M B Thompson. **Session:** Semester 1. **Classes:** (2 lec, 1 tut, 2 prac)/wk or (3 lec, 2 prac)/wk. **AssumedKnowledge:** 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. **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. Dr E L 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.

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. Dr E L May, A/Prof M B Thompson. **Session:** Semester 2. **Classes:** (2 lec, 1 tut, 2 prac)/wk or (3 lec, 2 prac)/wk, one field trip. **AssumedKnowledge:** 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. **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 of MBLG 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. Dr E L 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.

NB: The completion of 6 credit points of MBLG 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. Dr Jan Marc, Dr Murray Thomson, A/Prof Robyn Overall, Dr Osu Lilje. **Session:** Semester 1. **Classes:** (3 lec, 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. **Assessment:** One 3 hr theory exam, one project assignment, one prac report.

NB: The completion of 6 credit points of MBLG 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)

3. Undergraduate tables and units of study

BIOL 2916 Cell Biology (Advanced)

6 credit points. Dr Jan Marc, Dr Murray Thomson, A/Prof Robyn Overall, Dr Osu Lilje. **Session:** Semester 1. **Classes:** 3 lec/wk, 3hrs prac/wk (wk1-9). **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. **Assessment:** One 3 hr exam, one practical report and one project assignment.

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.

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. 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. **Assessment:** Two hour theory exam, two practical reports, a presentation, review and an insect collection.

NB: The completion of 6 credit points of MBLG 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. Practicals 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. They are arranged in three compatible timetables:

Timetable 1

BIOL 3011 Ecophysiology. February Semester (first half)(MS)

BIOL 3012 Animal Physiology. February Semester (second half)

BIOL 3017 Fungal Biology. Summer Break and February Semester

BIOL 3021 Plant Development. July Semester (first half)

BIOL 3022 Plant Physiology. July Semester (second half)

(Plus Advanced versions of these - BIOL 39xx)

Timetable 2

BIOL 3013 Marine Biology. February Semester (second half)(MS)

BIOL 3014 Terrestrial Vertebrates. February Semester (first half)

BIOL 3015 Plant Systematics. February Semester (second half)

BIOL 3023 Ecology (Methods). July Semester (first half)(MS)

BIOL 3040 Marine Ecology. July Semester (second half)(MS)

BIOL 3041 Terrestrial Ecology. July Semester (second half)(MS)

BIOL 3042 Plant Ecology. July Semester (second half)(MS)

(Plus Advanced versions of these - BIOL 39xx)

Timetable 3

BIOL 3018 Applications of Recombinant DNA Technology. February Semester (first half)

BIOL 3025 Evolutionary Genetics and Animal Behaviour. July Semester (first half)

BIOL 3026 Developmental Genetics. July Semester (second half)

BIOL 3027 Bioinformatics and Genomics. February Semester (second half)

(Plus Advanced versions of these - BIOL 39xx)

(Please note: from 2006, BIOL 3021/3931 will be replaced by the Plant Science unit of study PLNT 3002/3902 Plant Development.)

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 the Marine Ecology, BIOL 3040/3940. Entry to these modules would normally be based on academic performance.

The unit of study BIOL 3928 is only available to students in the Bachelor of Science (Molecular Biology and Genetics) and the Bachelor of Medical Science and BIOL 3929 is only available to students in the Bachelor of Science (Molecular Biology and Genetics). Students seeking further information about BIOL 3928 or BIOL 3929 should consult the relevant Tables earlier in this chapter as well as degree information in Chapter 2 of this handbook.

Students majoring in Marine Science must do 24 credit points of units designated as Marine Science but are allowed to include from 6 to a maximum of 18 credit points of Senior Biology (from those marked MS) as part of Marine Science. 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 3011 Ecophysiology

6 credit points. Dr Seebacher. **Session:** Semester 1a. **Classes:** 4 lec and 8 prac/wk. **Prerequisites:** 16 credit points of Intermediate Biology including BIOL (2002 or 2003 or 2006 or 2902 or 2903 or 2906). **Assessment:** One 1.5 hr exam, field trip seminar, laboratory reports.

NB: The completion of 6 credit points of MBLG 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. Dr Seebacher. **Session:** Semester 1a. **Classes:** 4 lec and 8 prac/wk. **Prerequisites:** Distinction average in 16 credit points of Intermediate Biology including BIOL (2002 or 2003 or 2006 or 2902 or 2903 or 2906). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Assessment:** One 1.5 hr exam, field trip seminar, independent project report. **NB:** The completion of 6 credit points of MBLG 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. A/Prof Thompson. **Session:** Semester 1b. **Classes:** 4 lec and 8 prac/wk. **Prerequisites:** 16 credit points of Intermediate Biology including BIOL (2002 or 2003 or 2006 or 2902 or 2903 or 2906). **Assessment:** One 1.5 hr exam, laboratory/library reports. **NB:** The completion of 6 credit points of MBLG 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. A/Prof Thompson. **Session:** Semester 1b. **Classes:** 4 lec and 8 prac/wk. **Prerequisites:** Distinction average in 16 credit points of Intermediate Biology including BIOL (2002 or 2003 or 2006 or 2902 or 2903 or 2906). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Assessment:** One 1.5 hr exam, laboratory reports, independent project report. **NB:** The completion of 6 credit points of MBLG 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. **Session:** Semester 1b. **Classes:** 4 lec & 8 prac/wk. **Assumed Knowledge:** MARS2002. **Prerequisites:** 16 credit points of Intermediate Biology, including BIOL (2001 or 2002 or 2003 or 2004 or 2901 or 2902 or 2903 or 2904). **Assessment:** Practical reports, paper criticisms and other assignments. **NB:** The completion of 6 credit points of MBLG 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. **Session:** Semester 1b. **Classes:** 4 lec & 8 prac/wk. **Assumed Knowledge:** MARS2002. **Prerequisites:** Distinction average in 16 credit points of Intermediate Biology including BIOL (2001 or 2002 or 2003 or 2004 or 2901 or 2902 or 2903 or 2904). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Assessment:** Practical reports, paper criticisms and other assignments. **NB:** The completion of 6 credit points of MBLG 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 3014 Biology of Terrestrial Vertebrates

6 credit points. **Session:** Semester 1a. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** 16 credit points of Intermediate Biology. **Assessment:** One 1.5hr exam, laboratory report, seminar, one 1 hr practical examination. **NB:** The completion of 6 credit points of MBLG units is highly recommended. This unit of study will review the biology and evolution of terrestrial vertebrate fauna, with emphasis on ecological and behavioural adaptations to the Australian environment. The adaptive radiations of amphibians, reptiles, birds and mammals will be discussed. Conservation issues involved with these taxa will also be a focus of the course. The unit aims to provide an overview of the distinctive features of the Australian environment, and how those peculiarities have shaped the way that terrestrial vertebrates have evolved in this continent.

BIOL 3914 Biology of Terrestrial Vertebrates (Adv)

6 credit points. **Session:** Semester 1a. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** Distinction average in 16 credit points of Intermediate Biology. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Assessment:** One 1.5hr exam, laboratory report, seminar, one 1hr prac exam. **NB:** The completion of 6 credit points of MBLG units is highly recommended. Compared to the associated unit of study BIOL 3014, the Advanced unit has less practical work but contains an independent research project.

BIOL 3015 Plant Systematics and Biogeography

6 credit points. Dr Henwood. **Session:** Semester 1b. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** 16 credit points of Intermediate Biology including BIOL (2004 or 2904). **Assessment:** One 1.5hr exam, assignments. **NB:** The completion of 6 credit points of MBLG units is highly recommended. This unit of study will deal with the biogeography and evolution of flowering plants. Students will be introduced to the latest methodologies and data sources employed in identifying evolutionary units (both past and present) and reconstructing their phylogenetic relationships. The general application of systematics - for example in ecology and conservation - will be considered.

BIOL 3915 Plant Systematics and Biogeography (Adv)

6 credit points. Dr Henwood, Dr Taylor. **Session:** Semester 1b. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** Distinction average in 16 credit points of Intermediate Biology including BIOL (2004 or 2904). These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Assessment:** One 1.5hr exam, assignments. **NB:** The completion of 6 credit points of MBLG units is highly recommended. See BIOL3015.

BIOL 3017 Fungal Biology

6 credit points. Dr P McGee. **Session:** Semester 1a. **Classes:** 5 lec & 15 prac in a two week intensive program immediately prior to semester one (labs run from 21 February to 4 March 2005), plus the equivalent of 30hrs self-guided study during the semester. **Prerequisites:** 16 credit points of Intermediate Biology, or 8 credit points of Intermediate Biology and 8 Intermediate credit points of either Microbiology or Geography, or their equivalent. **Assessment:** One 2hr take home exam, laboratory and written assignments. **NB:** The completion of 6 credit points of MBLG 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. Dr P McGee. **Session:** Semester 1a. **Classes:** 5 lec & 15 prac in a two week intensive program immediately prior to semester one (labs run from 21 February to 4 March 2005), plus the equivalent of 30hrs self-guided study during the semester. **Prerequisites:** Distinction average in 16 credit points of Intermediate Biology, or 8 credit points of Intermediate Biology and 8 Intermediate credit points of either Microbiology or Geography, or their equivalent. **Assessment:** One 2hr take home exam, laboratory and written assignments. **NB:** The completion of 6 credit points of MBLG 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. Dr B Lyon, Prof R Skurray. **Session:** Semester 1a. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** MBLG (2001 or 2901) and MBLG (2002 or 2902) or 16 credit points of Intermediate Biology. For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. **Assessment:** One 2 hr exam, practical report, assignment. **NB:** In 2006 the prerequisites will be MBLG (2771 or 2871) and MBLG (2072 or 2972) or 12 credit points of Intermediate Biology. 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.

3. Undergraduate tables and units of study

BIOL 3918 Applications of Recombinant DNA Tech Adv

6 credit points. Dr B Lyon. **Session:** Semester 1a. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** Distinction average in MBLG (2001 or 2901) and MBLG (2002 or 2902) or 16 credit points of Intermediate Biology. For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. **Assessment:** One 2 hr exam, assignment, seminar. **NB:** In 2006 the prerequisites will be MBLG (2771 or 2871) and MBLG (2072 or 2972) or 12 credit points of Intermediate Biology.

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 3021 Plant Development

6 credit points. Dr Marc, A/Prof Overall. **Session:** Semester 2a. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** 16 credit points of Intermediate Biology including BIOL (2003 or 2903 or 2006 or 2906). **Assessment:** One 2hr exam, assignments, one essay. **NB:** The completion of 6 credit points of MBLG is highly recommended. This unit will not be available from 2006.

Current topics in plant development are explored to the levels of plant cell biology and plant molecular biology. Subjects covered include the development of the plant body from embryo to a seedling, organogenesis at the shoot apical meristem, leaf development, differentiation of specialized cell types, signal transduction, plant hormones, developmental responses to the environment, role of extracellular matrix in plant development, development of polarity, and intercellular communication. Advances in the molecular basis of plant development are discussed. Practical work, which uses a variety of plant material including protoplasts, suspension cultures and Arabidopsis seedlings, involves a range of cellular and molecular techniques such as advanced light microscopy, immunochemistry, protein purification and characterisation, and the Green Fluorescent Protein technology.

BIOL 3931 Plant Development (Advanced)

6 credit points. Dr Marc, A/Prof Overall. **Session:** Semester 2a. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** Distinction average in 16 credit points of Intermediate Biology including BIOL (2003 or 2903 or 2006 or 2906). These requirements may be varied and students with lower averages should consult the unit Executive Officer. **Assessment:** One 2hr exam, assignments, one essay. **NB:** The completion of 6 credit points of MBLG units of study is highly recommended. This unit will not be available from 2006.

Qualified students will participate in alternative components of the BIOL 3021 Plant Development, representing 20% of the total assessment. The students will be exempt from one standard essay and one standard assignment, but instead will conduct an independent 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 and writing an essay on a related topic.

BIOL 3022 Plant Physiology

6 credit points. **Session:** Semester 2b. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** 16 credit points of Intermediate Biology including BIOL (2003 or 2006 or 2903 or 2906). **Assessment:** One 2 hr exam, assignment reports.

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

This unit of study comprises of lectures, practical assignments and journal assessment workshops so students can gain an understanding of the current applications of plant physiology. The unit will begin with a consideration of the physiology of photosynthesis using conventional techniques and will go on to the use of the pulse amplitude modulated (PAM) fluorometer. An in-depth assessment of our current understanding of plant water relations based on current research will follow. Experience with gas exchange analysis equipment, and self-guided modules applying knowledge of plant-water relationships and plant nutrition to practical problems in Australian agriculture, are included.

Textbooks

Taiz L, Zeiger E. 2002. Plant Physiology 3rd ed. Sunderland, Mass., Sinauer.

Journal articles (references to be provided during class)

BIOL 3932 Plant Physiology (Advanced)

6 credit points. **Session:** Semester 2b. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** Distinction average in 16 credit points of Intermediate Biology including BIOL (2003 or 2903 or 2006 or 2906). These requirements may be varied and students with lower averages should contact the unit Executive Officer. **Assessment:** One 2 hr exam, assignment reports.

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

Qualified students will participate in alternative components of BIOL3022 Plant Physiology. The content and nature of these components may vary from year to year. Some assessment will be in an alternative form.

BIOL 3023 Ecological Methods

6 credit points. Prof Dickman. **Session:** Semester 2a. **Classes:** 4 lec and 8 prac/wk. **Prerequisites:** 16 credit points of Intermediate Biology including BIOL (2001 or 2902 or 2902 or 2004 or 2904). **Assessment:** One 2 hr exam, laboratory reports. **NB:** The completion of 6 credit points of MBLG units is highly recommended.

The unit of study will consider ecology as a theoretical, quantitative, experimental science concerned with the analysis of patterns of dis-

tribution, abundance, dynamics, demography and life-histories of natural populations with an appraisal of the nature of scientific investigations, from a philosophical viewpoint and the practicalities of testing hypotheses in the real world. Application of ecological theory and methods to practical problems will be integrated throughout the unit of study.

Lectures will be on sound philosophical and experimental principles and useful for the more informed management, conservation and utilization 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. Students taking BIOL3023 only do not take the field course and will undertake coursework separate from the other students.

BIOL 3923 Ecological Methods (Advanced)

6 credit points. Prof Dickman. **Session:** Semester 2a. **Classes:** 4 lec and 8 prac/wk. **Prerequisites:** Distinction average in BIOL (2001 or 2901) and (2002 or 2902), or in 16 credit points of Intermediate Biology including BIOL (2004 or 2904). **Assessment:** One 2 hr exam, laboratory reports.

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

This unit of study has the same objectives as BIOL3023 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 the first week. This unit of study may be taken as a part of the BSc (Advanced) program.

BIOL 3025 Evolutionary Genetics & Animal Behaviour

6 credit points. A/Prof Oldroyd. **Session:** Semester 2a. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** 16 credit points from MBLG (2001 or 2901 or 2002 or 2902) and Intermediate Biology units. For BMedSc students: 32 credit points of Intermediate BMED units including BMED2502. **Assessment:** One 2hr exam, assignments, seminar. **NB:** In 2006 the MBLG prerequisites will be replaced by 12 credit points from MBLG (2771 or 2871) and MBLG (2072 or 2972).

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. A/Prof Oldroyd. **Session:** Semester 2a. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** Distinction average in 16 credit points from MBLG (2001 or 2901 or 2002 or 2902) and Intermediate Biology units. For BMedSc students 32 credit points of Intermediate BMED units including Distinction in BMED2502. These requirements may be varied and students with lower averages should consult the unit Executive Officer. **Assessment:** One 2hr exam, assignments, seminar.

NB: In 2006 the prerequisites will be: Distinction average in 12 credit points from MBLG (2771 or 2871) and MBLG (2072 or 2972).

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. Dr Saleeba, Dr Raphael, A/Prof Gillies. **Session:** Semester 2b. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** MBLG (2001 or 2901) and MBLG (2002 or 2902) or 16 credit points of Intermediate Biology. For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. **Assessment:** One 2hr exam, assignments.

NB: In 2006 the MBLG prerequisites will be replaced by 12 credit points from MBLG (2771 or 2871) and MBLG (2072 or 2972).

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 genetic skills.

BIOL 3926 Developmental Genetics (Advanced)

6 credit points. Dr Saleeba, Dr Raphael, A/Prof Gillies. **Session:** Semester 2b. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** Distinction average in MBLG (2001 or 2901 or 2002 or 2902) or 16 credit points of Intermediate Biology. For BMedSc students 32 credit points of Intermediate BMED units including Distinction in BMED2502. These requirements may be varied and students with lower averages should consult the unit Executive Officer. **Assessment:** One 2hr exam, assignments.

NB: In 2006 the prerequisites will be: 12 credit points from MBLG (2771 or 2871) and MBLG (2072 or 2972).

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. Dr Firth, Dr Jermini, Dr Saleeba and others. **Session:** Semester 1b. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** MBLG (2001 or 2101 or 2901) and MBLG (2002 or 2902) or 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2502. **Assessment:** One 2 hr exam, assignment. *NB: A recommended unit of study for third year students enrolled in the BSc (Bioinformatics) degree. In 2006 the prerequisites will be: MBLG (2771 or 2871)*

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, together with classical taxonomy and biodiversity.

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. Dr Firth, Dr Jermini, Dr Saleeba and others. **Session:** Semester 1b. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** Distinction MBLG (2001 or 2901) and MBLG (2002 or 2902) or Distinction average in 16 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2006 or 2906). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED 2502. These requirements may be varied and students with lower averages should consult the unit Executive Officer. **Assessment:** One 2 hr exam, assignment.

NB: A recommended unit of study for third year students enrolled in the BSc (Bioinformatics) degree. In 2006 the prerequisites will be: MBLG (2771 or 2871) and MBLG (2002 or 2902) or Distinction average in 12 credit points of Intermediate Biology including BIOL (2001 or 2901 or 2004 or 2904 or 2006 or 2906).

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.

BIOL 3928 Evolutionary Genetics Molecular (Adv)

6 credit points. A/Prof Oldroyd. **Session:** Semester 2a. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** Distinction average in 16 credit points of Intermediate Biology including MBLG ((2001 or 2901) and (2002 or 2902)). For BMedSc students: 32 credit points of Intermediate BMED units including Distinction in BMED2502. These requirements may be varied and students with lower averages should contact the unit Executive Officer. **Assessment:** One 2hr exam, assignments, seminar and an essay based on discussion sessions.

NB: The completion of 6 credit points of MBLG units of study is highly recommended. This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) and the Bachelor of Medical Science only.

This unit is the same as BIOL3925 Evolutionary Genetics and Animal Behaviour (Advanced), except for the addition of topical seminars and discussions in this discipline.

BIOL 3929 Developmental Genetics Molecular (Adv)

6 credit points. Dr Saleeba, Dr Raphael, A/Prof Gillies. **Session:** Semester 2b. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** Distinction average in 16 credit points of Intermediate Biology including MBLG (2001 or 2901 or 2002 or 2902). **Assessment:** One 2hr exam, assignments.

NB: This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) only. In 2006 the prerequisites will be: Distinction average in 12 credit points from MBLG (2771 or 2871) and MBLG (2072 or 2972).

This unit is the same as BIOL 3926 Developmental Genetics (Advanced) except for the inclusion of topical items in this discipline.

BIOL 3040 Marine Ecology

6 credit points. Dr Chapman, Prof Underwood, Dr C Styan. **Session:** Semester 2b. **Classes:** 4 lec and 8 prac/wk. **Prerequisites:** 16 credit points of Intermediate Biology. **Corequisites:** BIOL (3023 or 3923).. **Assessment:** One 2 hr exam, laboratory reports, practical assignments.

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

Marine Ecology explores the designs of experimental analysis of marine populations, drawing upon extensive examples from intertidal assemblages of animals and plants and from the biology of subtidal organisms in coastal habitats. No particular mathematical or statistical skills are required for this module. Much emphasis is placed on evaluation of recent studies in the literature. Laboratory classes deal with techniques of analysis and experimental manipulation of natural assemblages. The relationships between experimental marine ecology and general ecological theory are emphasised. The role of ecological science in management, conservation and exploitation of populations are emphasised. The unit of study includes a Field study (before Semester 2 starts; all details will be announced when they are available).

BIOL 3940 Marine Ecology (Advanced)

6 credit points. Dr Chapman, Prof Underwood, Dr C Styan. **Session:** Semester 2b. **Classes:** 4 lec and 8 prac/wk. **Prerequisites:** Distinction average in 16 credit points of Intermediate Biology. **Corequisites:** BIOL (3023 or 3923).. **Assessment:** One 2 hr exam, laboratory reports, practical assignments.

NB: From 2006 the prerequisites will be: Distinction average in 12 cp of Intermediate Biology

This unit has the same objectives as BIOL3030 Marine 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 unit 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 two. This unit of study may be taken as part of the BSc (Advanced).

BIOL 3041 Terrestrial Ecology

6 credit points. Dr C McArthur, Dr Hochuli, Prof Dickman. **Session:** Semester 2b. **Classes:** 4 lec and 8 prac/wk. **Prerequisites:** BIOL (2001 or 2901) and BIOL (2002 or 2902). **Corequisites:** BIOL (3023 or 3923). **Assessment:** One 2 hr exam, laboratory reports, practical assignments.

NB: The completion of 6 credit points of MBLG units is highly recommended. From 2006 the prerequisites will be: BIOL (2011 or 2911) and BIOL (2012 or 2912)

Terrestrial Ecology considers the dynamics of ecological systems. Inter- and intra-specific competition, herbivory, predation and other interactions are examined. Relationships between behavioural strategies of insect and vertebrate herbivores and predators, and the exploitation and conservation of their resources are a major focus. In addition, practical work investigates natural and exploited habitats. There is an emphasis on the relationships between ecological science and methods for management of populations, conservation and managed exploitation of animal and plant resources and the control of pests (including biological control). The unit of study includes a field study (before Semester 2 starts; all details will be announced when they are available).

BIOL 3941 Terrestrial Ecology (Advanced)

6 credit points. Dr McArthur, Dr Hochuli, Prof Dickman. **Session:** Semester 2b. **Classes:** 4 lec and 8 prac/wk. **Prerequisites:** Distinction average in BIOL (2001 or 2901) and (2002 or 2902). **Corequisites:** BIOL (3023 or 3923). **Assessment:** One 2 hr exam, laboratory reports, practical assignments.

NB: The completion of 6 credit points of MBLG units is highly recommended. From 2006 the prerequisites will be: Distinction average in BIOL (2011 or 2911) and BIOL (2012 or 2912)

This unit has the same objectives as BIOL3031 Terrestrial 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 unit 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 two. This unit of study may be taken as part of the BSc (Advanced).

BIOL 3042 Plant Ecology

6 credit points. Dr Wardle. **Session:** Semester 2b. **Classes:** 4 lec and 8 prac/wk. **Prerequisites:** 16 credit points of Intermediate Biology including BIOL (2004 or 2904). **Corequisites:** BIOL (3023 or 3923).. **Assessment:** One 2 hr exam, laboratory reports, practical assignments.

Plant Ecology integrates experimental studies, quantitative sampling and theoretical models to examine the ecological processes that produce complex interactions in natural populations. The lectures include the following topics: plants as modular individuals, demography, life history variation, reproductive ecology, dispersal,

3. Undergraduate tables and units of study

dormancy, recruitment, effects of neighbours, plant animal interactions, natural selection, ecological genetics, vegetation structure and diversity, succession and gap phase regeneration. Examples are given on the role of genetics, demography and population structure in the conservation and management of plants. The unit of study includes a Field study (before Semester 2 starts; all details will be announced when they are available).

BIOL 3942 Plant Ecology (Advanced)

6 credit points. Dr Wardle. **Session:** Semester 2b. **Classes:** 4 lec and 8 prac/wk. **Prerequisites:** Distinction average in 16 credit points of Intermediate Biology including BIOL (2004 or 2904). **Corequisites:** BIOL (3023 or 3923). **Assessment:** One 2 hr exam, laboratory reports, practical assignments.

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

This unit has the same objectives as BIOL3032 Plant 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 unit 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 two. This unit of study may be taken as part of the BSc (Advanced).

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.

Please Note: Part (c) is run in the February semester and must be taken in the calendar year of first enrolment by all students starting in February or July of that year.

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 Junior 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.

Instruction in experimental design, and other technical instruction is run early in the February semester, and must be taken in the calendar year of first enrolment by all students starting in February or July of that year.

The composition of the Graduate Diploma course is identical to that for Honours (see Biology Honours).

Postgraduate study

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 in the School's Research Interests Handbook, which is available from the School Office (Science Road Cottage, A10) or 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 3101 Pathological Basis of Human Disease

12 credit points. Prof. Hunt, Dr Gibbins, Dr Hambly, A/Prof. King, Dr Pamphlett and others. **Session:** Semester 2. **Classes:** 3hr lec, 6 hrs self directed learning or museum sessions, & 3 hr microscopic specimen prac class/wk (Total 12 hrs/wk). **Prerequisites:** ANAT2001 or BCHM (2001 or 2002 or 2101 or 2102 or 2901 or 2902) or MBLG (2001 or 2101 or 2901) or BIOL (2001 or 2002 or 2006 or 2101 or 2102 or 2105 or 2106 or 2901 or 2902 or 2906) or HPSC (2001 or 2002) or MICR (2001 or 2003 or 2901) or PCOL2001 or PHSI2001. For BMedSc: 32 credit points from Intermediate BMED units of study. **Assessment:** Project Report (10%), Theory exam (60%), Practical exam (30%).

NB: The completion of 6 credit points of MBLG units of study is highly recommended. From 2006 BMedSc students will need 42 credit points of Intermediate BMED units of study.

The Pathological Basis of Human Disease unit of study modules will provide a practical and theoretical background to the scientific basis of the pathogenesis of disease, including elements of forensic pathology. Areas covered in theoretical modules include: tissue responses to exogenous factors, adaptive responses to foreign agents, cardiovascular/pulmonary responses to disease, forensic science, neuropathology and cancer. Practical modules include disease specimen evaluation on a macroscopic and microscopic basis. 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. It fulfils the Pathology requirements for the Centre for Chiropractic at Macquarie University.

Textbooks

Kumar, Cotran & Robbins. Basic Pathology. 6th edition, W B Saunders, 1997.

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 units of study to students enrolled in the Faculty of Science majoring particularly in Chemistry, but also Biochemistry, Physics or Mathematics.

Details regarding these units of study can be obtained from the Faculty of Engineering Handbook. The units of study are intended to give a science student some insight into the principles which control the design and performance of large scale industrial processing plants. As well as the above units of study, Faculty of Science students are invited to enrol in any other chemical engineering unit of study, provided they have the appropriate prerequisites.

Double Degree

Some BSc graduates, who have passed all four of the above units of study within the Department of Chemical Engineering, may obtain

a Bachelor of Engineering degree in Chemical 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. 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 1B

CHEM 1101 Chemistry 1A

CHEM 1102 Chemistry 1B

CHEM 1901 Chemistry 1A (Advanced)

CHEM 1902 Chemistry 1B (Advanced)

CHEM 1903 Chemistry 1A (Special Studies Program)

CHEM 1904 Chemistry 1B (Special Studies Program)

CHEM 1905, CHEM 1906 and CHEM 1907 are only available to students in the Bachelor of Science (Molecular Biology and Genetics)

CHEM 1908 is only available to students in the Bachelor of Medical Science, Bachelor of Science (Nutrition) and the Bachelor of Science (Molecular Biotechnology)

CHEM 1909 is only available to students in the Bachelor of Medical Science, Bachelor of Science (Molecular Biology and Genetics), Bachelor of Science (Nutrition) and Bachelor of Science (Molecular Biotechnology)

Students seeking further information about CHEM 1905, CHEM 1906, CHEM 1907, CHEM 1908 or CHEM 1909 should consult the relevant Tables earlier in this chapter as well as degree information in Chapter 2 of this handbook.

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. **Session:** Semester 1. **Classes:** 3 lec & 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. **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 1B

6 credit points. **Session:** Semester 2. **Classes:** 3 lec & 1 tut/wk & 3hrs prac/wk for 10 wks. **Prerequisites:** CHEM (1001 or 1101) or equivalent. **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%).

CHEM1002 builds on CHEM1001 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. **Session:** Summer, Semester 1, Semester 2. **Classes:** 3 lec & 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. **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 1B

6 credit points. **Session:** Summer, Semester 1, Semester 2. **Classes:** 3 lec & 1 tut/wk & 3hrs prac/wk for 10 wks. **Prerequisites:** CHEM (1101 or 1901) or a Distinction in CHEM1001 or equivalent. **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics. **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%).

Chemistry 1B is built on a satisfactory prior knowledge of Chemistry 1A and covers inorganic and organic chemistry. Chemistry 1B 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. **Session:** Semester 1. **Classes:** 3 lec & 1 tut/wk & 3hrs prac/wk for 10 wks. **Prerequisites:** UAI of at least 96.4 and HSC Chemistry result >80, 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. **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 1A.

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 1B (Advanced)

6 credit points. **Session:** Semester 2. **Classes:** 3 lec & 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. **Assessment:** Theory examination (75%), laboratory exercises and continuous assessment quizzes (25%).

NB: Department permission required for enrolment.

Chemistry 1B (Advanced) is built on a satisfactory prior knowledge of Chemistry 1A (Advanced) and covers inorganic and organic chemistry. Chemistry 1B (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. **Session:** Semester 1. **Classes:** 3 lec & 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.

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).

3. Undergraduate tables and units of study

A Distinction in Chemistry 1A (Special Studies Program) is an acceptable prerequisite for entry into Chemistry 1B (Special Studies Program).

CHEM 1904 Chemistry 1B (Special Studies Program)

6 credit points. **Session:** Semester 2. **Classes:** 3 lec & 1 tut/wk & 3hrs prac/wk. **Prerequisites:** Distinction in CHEM 1903. **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics including MATH (1003 or 1903). *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 1B (Special Studies Program) is restricted to students who have gained a Distinction in Chemistry 1A (Special Studies Program). The practical work syllabus for Chemistry 1B (Special Studies Program) is very different from that for Chemistry 1B and Chemistry 1B (Advanced) and consists of special project-based laboratory exercises. All other unit of study details are the same as those for Chemistry 1B (Advanced).

Chemistry 1B (Special Studies Program) is an acceptable prerequisite for entry into Intermediate Chemistry units of study.

CHEM 1905 Chemistry 1A Molecular (Advanced)

6 credit points. **Session:** Semester 1. **Classes:** 3 lec/tut & 3hr prac/wk for 10 weeks & 7 discussion sessions. **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 unit of study: 6 credit points of Junior Mathematics. **Assessment:** One 3hr closed book exam (65%), prac reports (10%), quizzes (15%), essay based on discussion sessions (10%).

NB: Department permission required for enrolment. This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) only. This unit of study is the same as CHEM1901 except for the addition of 7 special molecular biology and genetics discussion sessions, which consist of topical seminars and discussions in this discipline. An essay based on these discussions is included as part of the assessment of the unit of study.

CHEM 1906 Chemistry 1A Mol (Special Studies Prog)

6 credit points. **Session:** Semester 1. **Classes:** 3 lec/tut & 3hr prac/wk & 7 discussion sessions. **Prerequisites:** UAI of at least 98.7 and HSC Chemistry result in band 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. **Assessment:** One 3hr closed book exam (65%), prac reports (10%), quizzes (15%), essay based on discussion sessions (10%).

NB: Department permission required for enrolment. Entry is by invitation. This unit of study is deemed to be an Advanced unit of study. This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) only. This unit of study is the same as CHEM1903 except for the addition of 7 special molecular biology and genetics discussion sessions, which consist of topical seminars and discussions in this discipline. An essay based on these discussions is included as part of the assessment of the unit of study.

CHEM 1907 Chemistry 1 Life Sciences A Mol (Adv)

6 credit points. **Session:** Semester 1. **Classes:** Total of 6hrs per week consisting on average of 3 lectures, 1 tutorial/discussion session and 2hrs of practical work. **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. **Assessment:** Exam 65%, practicals 10%, quizzes 15%, essay based on discussion sessions 10%.

NB: This unit of study is available to students enrolled in the Bachelor of Science (Molecular Biology and Genetics) 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 this applies 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/Discussions (13 hr): These will provide aspects of problem solving and will include special lectures on aspects of molecular biology and genetics from external experts.

Textbooks

A booklist is contained in the booklet Junior Chemistry distributed at enrolment. Further information can be obtained from the School.

CHEM 1908 Chemistry 1 Life Sciences A (Advanced)

6 credit points. **Session:** Semester 1. **Classes:** Total of 6hrs per week consisting on average of 3 lectures, 1 tutorial session and 2hrs of practical work. **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. **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 (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 Mol (Adv)

6 credit points. **Session:** Semester 2. **Classes:** Total of 6hrs per week consisting on average of 3 lectures, 1 tutorial session and 2hrs of practical work. **Prerequisites:** CHEM (1907 or 1908) or equivalent. **Corequisites:** Recommended concurrent units of study: 6 credit points of Junior Mathematics. **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 units of study are offered:

CHEM 2401 Molecular Reactivity and Spectroscopy, 6 credit points

CHEM 2402 Chemical Structure and Stability, 6 credit points

CHEM 2403 Chemistry of Biological Molecules, 6 credit points

CHEM 2404 Forensic and Environmental Chemistry, 6 credit points

CHEM 2911 Molecular Reactivity and Spectroscopy (Adv), 6 credit points

CHEM 2912 Chemical Structure and Stability (Adv), 6 credit points

CHEM 2913 Chemistry of Biological Molecules (Adv), 6 credit points

CHEM 2915 Molecular Reactivity and Spectroscopy SSP, 6 credit points

CHEM 2916 Chemical Structure and Stability SSP, 6 credit points

CHEM 2913 is available to students in the Bachelor of Science (Molecular Biology and Genetics) and the Bachelor of Science (Molecular Biotechnology) only. Students seeking further information about CHEM 2913 should consult the relevant Tables earlier in this chapter as well as degree information in Chapter 2 of this handbook.

CHEM 2401 Molecular Reactivity and Spectroscopy

6 credit points. Dr R J Clarke. **Session:** Semester 1. **Classes:** Three lectures per week, seven 1 hour tutorials per semester, seven four-hour practicals per semester. **Prerequisites:** CHEM (1102 or 1902 or 1904 or 1909 or 1612); 6 credit points of Junior Mathematics. **Assessment:** One 2 hour exam plus assignment/assessment.

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. Dr R J Clarke. **Session:** Semester 2. **Classes:** Three lectures per week, seven 1 hour tutorials per semester, seven four-hour practicals per semester. **Prerequisites:** CHEM (1102 or 1902 or 1904 or 1909 or 1612); 6 credit points of Junior Mathematics. **Assessment:** One 2 hour exam plus assignment/assessment.

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. Dr R J Clarke. **Session:** Semester 2. **Classes:** Three lectures per week, eight 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. **Assessment:** One 2 hour exam plus assignment/assessment.

NB: To enrol in Senior Chemistry in 2006 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.

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, biomimetalisation, 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. Dr R J Clarke. **Session:** Semester 1. **Classes:** Two lectures per week, one tutorial per week, plus five 4 hour practical sessions per semester. **Prerequisites:** CHEM 1102 or 1902 or 1904 or 1909; 6 credit points of Junior Mathematics. **Corequisites:** BSc candidates CHEM (2101 or 2301 or 2401 or 2502 or 2901 or 2911 or 2915). **Assessment:** One 2 hour exam plus assignment/assessment.

NB: To enrol in Senior Chemistry in 2006 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.

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 of analytical techniques and chemical problem solving in the context of forensic and environmental chemistry. The basics of natural chemical processes in the environment (elemental cycles and energy balance) leads on to case studies involving air and water pollution and strategies for solutions, including lectures on 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, EDAX ICP, 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. 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:** Credit 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. **Assessment:** One 2 hour exam plus assignment/assessment.

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. 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:** Credit 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. **Assessment:** One 2 hour exam plus assignment/assessment.

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. Dr R J Clarke. **Session:** Semester 2. **Classes:** Three lectures per week, eight 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. **Assessment:** One 2 hour exam plus assignment/assessment.

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, biomimetalisation, 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. 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. **Assessment:** 1 x 2 hour exam plus assignment/assessment.

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 2004 were Artificial Molecular Machines, Composite Materials and Nanostructured Inorganic Materials.

CHEM 2916 Chemical Structure and Stability (SSP)

6 credit points. 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. **Assessment:** 1 x 2 hour exam plus assignment/assessment.

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 2004 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

A/Professor A E Masters

The School of Chemistry offers a broad choice of 3 credit point units of study to cater for the differing needs and interests of students. Each unit involves one lecture and the equivalent of 2 hours of lab each week. A number of corequisites and restrictions apply and students should refer to the information below concerning the degree for which they are enrolled.

Bachelor of Science

Bachelor of Science/Arts

Bachelor of Science/Law

Bachelor of Science/Commerce

Bachelor of Medical Science

For all of the above degrees, the following conditions apply concerning selection of Senior Chemistry units of study:

1) Students must choose a total of either 12 or 24 credit points in Senior Chemistry (i.e. 4 or 8 units of study) in a given semester. This restriction is necessary to accommodate the lab classes.

2) There are 3 Groups of units of study, indicated by the second number in the unit code, i.e. CHEMx1xx indicates Group 1, CHEMx2xx indicates Group 2, etc. Students enrolling in either 12

3. Undergraduate tables and units of study

or 24 credit points of Senior Chemistry in a semester may only select units from Groups 1, 2 and 3 and must select at least one unit from each of these Groups.

3) The lab classes will consist of two 4 hour sessions for students enrolled in 12 credit points and four 4 hour sessions for students enrolled in 24 credit points of Senior Chemistry. The lab classes are independent of the specific selection of units of study.

Bachelor of Science (Adv)

For students completing a Bachelor of Science (Adv) the following conditions apply concerning selection of Senior Chemistry units of study:

1) Students must choose a total of either 12 or 24 credit points in Senior Chemistry (i.e. 4 or 8 units of study) in a given semester.

2) Advanced units of study are identified by a unit code of the form CHEMxx9x. Students who wish to enrol in Advanced Senior Chemistry units of study should make sure that they have indicated the appropriate unit code.

3) There are 4 groups of units of study, indicated by the second number in the unit code, i.e. CHEMx1xx indicates Group 1, CHEMx2xx indicates Group 2, etc. Students enrolling in either 12 or 24 credit points of Senior Chemistry in a semester must select units from Groups 1-3 and must select at least one unit from each of these Groups.

4) Students enrolled in either 12 or 24 credit point of Advanced Senior Chemistry units must attend an additional seminar series (1 hour/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..

5) The lab classes will consist of two 4 hour sessions for students enrolled in 12 credit points and four 4 hour sessions for students enrolled in 24 credit points of Senior Chemistry. The lab classes are independent of the specific selection of units of study.

Bachelor of Science (Environmental)

Students enrolled in the Bachelor of Science (Environmental) degree who wish to take Senior Chemistry electives in Semester 1 must enrol in CHEM3100 (or CHEM3190) and CHEM3209 (or CHEM3299). Students in this degree who wish to take the Senior Chemistry elective in Semester 2 must enrol in two of the following units: CHEM3105 (or CHEM3195), CHEM3107 (or CHEM3197) and CHEM3305 (or CHEM3395).

Bachelor of Science (Molecular Biology and Genetics)

Students enrolled in the Bachelor of Science (Molecular Biology and Genetics) degree who wish to take the Senior Chemistry elective in Semester 2 are required to enrol in CHEM3105 (or CHEM3195), CHEM3205 (or CHEM3295), CHEM3306 (or CHEM3396) and any other Semester 2 unit from Groups 1-3.

Bachelor of Science (Molecular Biotechnology)

Students enrolled in Bachelor of Science (Molecular Biotechnology) who wish to take the Senior Chemistry elective in Semester 1 must enrol in CHEM3209 (or CHEM3299). Students who wish to enrol in an additional 12 or 24 credit points of Senior Chemistry should refer to the requirements for either the Bachelor of Science or Bachelor of Science (Adv).

Group 1

CHEM 3100 Chemistry of the Main Group

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). For students in BSc (ENVI): CHEM (1102 or 1902) and ENVI2002. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3 or 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from each of Groups 2 and 3. Students taking one other senior chemistry unit have no restriction placed on their selection of senior chemistry units. For BSc (Environmental) students CHEM3209. **Assessment:** Exam (67%) and lab (33%). **NB:** From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916). For students in BSc (ENVI): CHEM (1102 or 1902) and ENVI2002.

The unit introduces general principles and trends in the physical and chemical properties of the p-block elements. It then discusses the more exotic chemistry of the metals and metalloids of Periodic Table groups 13 and 14, and the non-metallic elements of groups 15-18. Emphasis is placed on the chemical basis of the biological and environmental aspects of these elements as well as examining technologically important materials and new substances with the potential for industrial applications.

Topics will be selected from: boron hydrides, structures, bonding and topology; carboranes and dicarbollide ion complexes; organo-aluminium compounds; semi-conductors; silicates; zeolites; bioorganosilicon chemistry; preparation, properties and use of silicones; condensed polyphosphates, detergents; polyphosphazene systems, pseudo-aromaticity; acid rain; noble gas chemistry; lead compounds, lead oxides; industrial production of chemicals, pollutants from industrial sources; biological implications of p-block elements and other current issues.

CHEM 3103 Organometallic and Catalytic Chemistry

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM (3105 and 3205 and 3306). **Assessment:** Exam (67%) and lab (33%). **NB:** From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)

The objective of the unit is to provide an understanding of the fundamental organometallic chemistry, which underpins industrially important catalytic processes. Starting from an overview of catalysis and catalytic processes, which includes coverages of economic and engineering considerations, the features of organometallic chemistry which relate to catalysis are identified. Those features (ligand types, bonding models, fundamental reactions, clusters, spectroscopic characterization) are examined in turn. The combination of these fundamental reactions to form catalytic cycles is discussed. Finally industrially important catalytic processes are analysed in terms of the fundamental organometallic chemistry covered in the unit.

CHEM 3104 Symmetry and Vibrational Spectra

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units.. **Assessment:** Exam (67%) and lab (33%). **NB:** From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

In order to have a full understanding of vibrational or electronic spectroscopy it is essential to have a firm background in symmetry. Symmetry is an inherently attractive tool for chemists since by applying very simple rules of symmetry it is possible to make inroads into numerous chemical problems such as chemical bonding, molecular vibrations and electronic transitions. Symmetry is used in inorganic chemistry, organic stereochemistry, crystallography and spectroscopy, just to name a few areas. Before we can use symmetry we need to learn some of the rules and define the terms that are frequently used. This involves using group theory theorems without having to be able to prove them mathematically. The course will then examine vibrational spectroscopy of inorganic and biological molecules.

CHEM 3105 Biol/Environ Transition Metal Chem

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BSc (Environmental) candidates CHEM (1102 or 1902) and ENVI2002; for BMedSc candidates: Credit in CHEM ((2311 and 2312) or 2903); for BSc (Molecular Biology and Genetics) candidates: CHEM2903; for BSc (MOBT) candidates: MOBT (2001 and 2002) and CHEM ((2311 and 2312) or 2903). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3205 and CHEM3306 and one other Semester 2 Senior Chemistry unit selected from any Group. For BSc (Environmental) students CHEM3305. **Assessment:** Exam (67%) and lab (33%). **NB:** From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BSc (Environmental) candidates CHEM (1102 or 1902) and ENVI 2002; for BMedSc candidates: Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913); for BSc (Molecular Biology and Genetics) candidates: CHEM (2903 or 2913); for BSc (MOBT) candidates: MOBT2102 and CHEM ((2311 and 2312) or 2403 or 2903 or 2913).

The transition metals have an enormous variety of natural roles in biology; in biological catalysis, oxygen transport, electron transfer and stabilisation of large biomolecules. These roles will be illustrated by descriptions of metalloproteins containing zinc, iron, copper and molybdenum. Examples include recent research on "zinc fingers", nitrogen fixation and photosynthesis. The medical consequences of nutritional trace-element deficiencies are discussed. Transition metals are also important in medicine, both as drugs and as toxins. The use of metal complexes such as platinum anticancer drugs, tumour imaging agents and radiation enhancers will be described. Heavy metal toxicity and the environmental problems associated with heavy metals will also be discussed. All topics are discussed in the context of chemical structure, hard-soft-acid-base theory, stability and reactivity.

CHEM 3106 Inorganic Materials Chemistry

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. **Assessment:** Exam (67%) and lab (33%). **NB:** From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM (2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)

Materials chemistry is concerned with strategies for tailor-making materials with desired and controllable properties, be they catalytic, magnetic, electronic or adsorptive. To do this requires an understanding of the intricacies of structure and bonding in the solid state. This unit will provide an overview of a number of types of materials and the methods used in their characterisation. Topics to be covered include; the structure-property relationships in metal oxides displaying superconductivity or other unusual electronic properties; the potential of molecular solids for use in electronic and magnetic devices; and the importance of porosity in separations, sensing and catalysis.

CHEM 3107 Forensic and Analytical Chemistry

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. **Assessment:** Exam (67%) and lab (33%). **NB:** From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

This unit 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. You will 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, EDAX ICP, HPLC, trace metals analysis, separation science, DNA analysis, etc., singly and in combination are used to examine forensic evidence. Guest speakers will assist with the unit as available.

CHEM 3108 Supramolecular Materials

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. **Assessment:** Exam (67%) and lab (33%). **NB:** From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM (2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)

In contrast to formation of covalent bonds between atoms in molecules, supramolecular chemistry refers to the non-covalent interactions between molecules. These non-covalent interactions (for example, hydrogen bonding, electrostatic interactions, stacking effects, π -interactions, and metal binding) are prevalent in biological systems, and are the crucial interactions that result in the binding of specific substrates or enzymes to receptor proteins, in the assembly of protein-protein complexes, in the assembly and stabilisation of DNA, and in the structures and functions of membranes. Chemists are now able to utilise these non-covalent interactions in a similar manner to Nature, and thus allow the construction or self-assembly of large arrays of molecules. Examples of supramolecular systems which

will be discussed include the design and synthesis of artificial receptors for drugs, amino acids and nucleotides, the selective encapsulation of metal ions, chemical switches, enzyme mimics, the one-pot assembly of catenanes, rotaxanes and double and triple-helices, and the design and synthesis of molecular frameworks for separations and catalysis.

CHEM 3109 Transition Metal Chemistry

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. **Assessment:** Exam (67%) and lab (33%).

NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

Transition metal chemistry finds applications in areas such as life processes, advanced materials, colour chemistry, analytical chemistry, environmental chemistry, organic synthesis, marine chemistry, geochemistry and catalysis. This unit involves a systematic study of the 3d, 4d, and 5d transition elements and the lanthanoids. Their physical and chemical properties and the application of their compounds to the above mentioned areas will be discussed. Emphasis is placed on the correlation of physical properties with electronic and geometric structures, which will lead on to a study of inorganic reaction mechanisms. The latter are central to the understanding of a large number of processes, including enzymatic processes, industrial catalysis and many organic oxidations. Topics to be discussed include substitution reactions of octahedral and square-planar complexes, oxidation-reduction and electron-transfer reactions.

CHEM 3190 Chemistry of the Main Group (Adv)

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or 2311 and 2312 or 2903 or 2901) and CHEM (2302 or 2902). **Corequisites:** Either 1 or 3 or 5 or 7 other Senior Chemistry units of study. Students taking 3 or 5 or 7 other senior chemistry units are to select units from Groups 1-3 including at least one unit from each of Groups 2 and 3. Students taking one other senior chemistry unit have no restriction placed on their selection of senior chemistry units. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

The unit introduces general principles and trends in the physical and chemical properties of the p-block elements. It then discusses the more exotic chemistry of the metals and metalloids of Periodic Table groups 13 and 14, and the non-metallic elements of groups 15-18. Emphasis is placed on the chemical basis of the biological and environmental aspects of these elements as well as examining technologically important materials and new substances with the potential for industrial applications.

Topics will be selected from: boron hydrides, structures, bonding and topology; carboranes and dicarbollide ion complexes; organo-aluminium compounds; semi-conductors; silicates; zeolites; bioorganosilicon chemistry; preparation, properties and use of silicones; condensed polyphosphates, detergents; polyphosphazene systems, pseudo-aromaticity; acid rain; noble gas chemistry; lead compounds, lead oxides; industrial production of chemicals, pollutants from industrial sources; biological implications of p-block elements and other current issues.

CHEM 3193 Organometallic and Catalytic Chem (Adv)

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3195 and 3295 and 3396. **Assessment:** exam (67%) and lab+advanced seminars (33%).

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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates a high WAM and a Distinction in CHEM (2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)

The objective of the unit is to provide an understanding of the fundamental organometallic chemistry, which underpins industrially important catalytic processes. Starting from an overview of catalysis and catalytic processes, which includes coverages of economic and engineering considerations, the features of organometallic chemistry

3. Undergraduate tables and units of study

which relate to catalysis are identified. Those features (ligand types, bonding models, fundamental reactions, clusters, spectroscopic characterization) are examined in turn. The combination of these fundamental reactions to form catalytic cycles is discussed. Finally industrially important catalytic processes are analysed in terms of the fundamental organometallic chemistry covered in the unit.

CHEM 3194 Symmetry and Vibrational Spectra (Adv)

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units.. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

In order to have a full understanding of vibrational or electronic spectroscopy it is essential to have a firm background in symmetry. Symmetry is an inherently attractive tool for chemists since by applying very simple rules of symmetry it is possible to make inroads into numerous chemical problems such as chemical bonding, molecular vibrations and electronic transitions. Symmetry is used in inorganic chemistry, organic stereochemistry, crystallography and spectroscopy, just to name a few areas. Before we can use symmetry we need to learn some of the rules and define the terms that are frequently used. This involves using group theory theorems without having to be able to prove them mathematically. The course will then examine vibrational spectroscopy of inorganic and biological molecules.

CHEM 3195 Biol/Environ Transition Metal Chem (Adv)

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902); for BMedSc candidates: a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903)); for BSc (Molecular Biology and Genetics) candidates: a high WAM and a Distinction in CHEM2903; for BSc (MOBT) candidates: MOBT (2001 and 2002), a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM3295 and CHEM3396 and one other semester 2 Senior advanced Chemistry unit selected from any Group.. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916); for BMedSc candidates: a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913); for BSc (Molecular Biology and Genetics) candidates: a high WAM and a Distinction in CHEM (2903 or 2913); for BSc (MOBT) candidates: MOBT2102, a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913).

The transition metals have an enormous variety of natural roles in biology; in biological catalysis, oxygen transport, electron transfer and stabilisation of large biomolecules. These roles will be illustrated by descriptions of metalloproteins containing zinc, iron, copper and molybdenum. Examples include recent research on "zinc fingers", nitrogen fixation and photosynthesis. The medical consequences of nutritional trace-element deficiencies are discussed. Transition metals are also important in medicine, both as drugs and as toxins. The use of metal complexes such as platinum anticancer drugs, tumour imaging agents and radiation enhancers will be described. Heavy metal toxicity and the environmental problems associated with heavy metals will also be discussed. All topics are discussed in the context of chemical structure, hard-soft-acid-base theory, stability and reactivity.

CHEM 3196 Inorganic Materials Chemistry (Adv)

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMed Sci and BSc(MBLG) candidates CHEM3195 and 3295 and 3396.. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or

2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)

Materials chemistry is concerned with strategies for tailor-making materials with desired and controllable properties, be they catalytic, magnetic, electronic or adsorptive. To do this requires an understanding of the intricacies of structure and bonding in the solid state. This unit will provide an overview of a number of types of materials and the methods used in their characterisation. Topics to be covered include; the structure-property relationships in metal oxides displaying superconductivity or other unusual electronic properties; the potential of molecular solids for use in electronic and magnetic devices; and the importance of porosity in separations, sensing and catalysis.

CHEM 3197 Forensic and Analytical Chemistry (Adv)

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units.. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916).

This unit 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. You will 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, EDAX ICP, HPLC, trace metals analysis, separation science, DNA analysis, etc., singly and in combination are used to examine forensic evidence. Guest speakers will assist with the unit as available.

CHEM 3198 Supramolecular Materials (Adv)

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMed Sci and BSc(MBLG) candidates CHEM3195 and 3295 and 3396.. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)

In contrast to formation of covalent bonds between atoms in molecules, supramolecular chemistry refers to the non-covalent interactions between molecules. These non-covalent interactions (for example, hydrogen bonding, electrostatic interactions, stacking effects, - interactions, and metal binding) are prevalent in biological systems, and are the crucial interactions that result in the binding of specific substrates or enzymes to receptor proteins, in the assembly of protein-protein complexes, in the assembly and stabilisation of DNA, and in the structures and functions of membranes. Chemists are now able to utilise these non-covalent interactions in a similar manner to Nature, and thus allow the construction or self-assembly of large arrays of molecules. Examples of supramolecular systems which will be discussed include the design and synthesis of artificial receptors for drugs, amino acids and nucleotides, the selective encapsulation of metal ions, chemical switches, enzyme mimics, the one-pot assembly of catenanes, rotaxanes and double and triple- helices, and the design and synthesis of molecular frameworks for separations and catalysis.

CHEM 3199 Transition Metal Chemistry (Adv)

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 2 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units.. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or

2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

Transition metal chemistry finds applications in areas such as life processes, advanced materials, colour chemistry, analytical chemistry, environmental chemistry, organic synthesis, marine chemistry, geochemistry and catalysis. This unit involves a systematic study of the 3d, 4d, and 5d transition elements and the lanthanoids. Their physical and chemical properties and the application of their compounds to the above mentioned areas will be discussed. Emphasis is placed on the correlation of physical properties with electronic and geometric structures, which will lead on to a study of inorganic reaction mechanisms. The latter are central to the understanding of a large number of processes, including enzymatic processes, industrial catalysis and many organic oxidations. Topics to be discussed include substitution reactions of octahedral and square-planar complexes, oxidation-reduction and electron-transfer reactions.

Group 2

CHEM 3200 Stereochemistry and Mechanisms

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. **Assessment:** Exam (67%) and lab (33%).

NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

The unit oversees organic chemistry from a mechanistic point of view. You first learn more about the stereochemistry of molecules, the issues of chirality, how to make chiral substances and why all this is important in biology and in the chemical laboratory. Then you see how the stereochemical changes in reactions allow you to prove unambiguously how stepwise substitution, addition and elimination reactions proceed, and finally you learn the wonderfully simple laws which explain (and allow you to predict how) concerted reactions occur.

CHEM 3203 Bioorganic Chemistry

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. **Assessment:** Exam (67%) and lab (33%).

NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

DNA, proteins and carbohydrates are the three classes of essential biomolecules that are present in all biological systems. This unit will cover the structure and chemical reactivity of the building blocks (nucleotides, amino acids and monosaccharides) from which these molecules are assembled as well as the structure and function of these biomolecules in living systems. Applications of this chemistry will be highlighted for example: sugar (sucrose) and artificial sweeteners (Nutrasweet, Splenda); fibre in the diet (what is in Metamucil and All-Bran?); the chemistry of hair, nails and enzymes; medicinally important drugs that interact with DNA (mustard gas, ethidium bromide, current clinically used chemotherapy drugs), and DNA fingerprinting.

CHEM 3204 Heterocyclic Chemistry

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. **Assessment:** Exam (67%) and lab (33%).

NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)

Some 40% of all known organic compounds are heterocyclic and many have outstanding chemical, biological, and industrial importance. The first part of this unit deals with rings with a single heteroatom and can be regarded as a logical continuation of the aromatic chemistry of the second year units. The synthesis and reactions of five- and six-membered heterocyclic compounds, and the influence of the heteroatom will be discussed. The second part of this unit deals with heterocyclic compounds with two or more heteroatoms in the ring system including: important ring systems such as pyrimidines and purines (that are an integral part of the DNA and

RNA bases); imidazole and thiazole (that are found in some amino acids and vitamins); and porphyrins (that are natural colouring substances and that are responsible for the oxygen-carrying component of blood).

CHEM 3205 Medicinal and Biological Chemistry

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902); for BMedSc candidates: CHEM ((2311 and 2312) or 2903); for BSc (Molecular Biology and Genetics) candidates: CHEM2903; for BSc (MOBT) candidates: MOBT (2001 and 2002) and CHEM ((2311 and 2312) or 2903). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and CHEM 3306 and one other Semester 2 Senior Chemistry unit selected from any Group. **Assessment:** Exam (67%) and lab (33%). *NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916); for BMedSc candidates: Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913); for BSc (Molecular Biology and Genetics) candidates: CHEM (2903 or 2913); for BSc (MOBT) candidates: MOBT2102, and CHEM ((2311 and 2312) or 2403 or 2903 or 2913).*

This focus of this unit is how pharmaceuticals are designed and synthesised, and how they work. No previous knowledge of biochemistry or cell biology is required or assumed.

The structures and properties of the major targets of drug action - enzymes, receptors, DNA and cell membranes - will be described in detail. The molecular basis for the therapeutic activity of various drugs will be explored, and a description of how pharmaceuticals interact with their specific biomolecular targets to confer their medicinal properties will be presented. The current arsenal of methods used in the discovery of new drugs will be highlighted, including rational drug design, random screening and combinatorial chemistry. Various case studies will be examined throughout the unit, including examples of the action of antibiotics (penicillin, vancomycin), anti-inflammatory drugs (aspirin, naproxen), cholesterol-lowering agents (Lipitor®) and anti-cancer compounds (Taxol®).

CHEM 3206 Radical and Pericyclic Chemistry

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. **Assessment:** Exam (67%) and lab (33%).

NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)

The unit will first deal with free radicals which are ubiquitous species involved in the O₂-initiated breakdown of biological material (a radical reaction often mentioned by manufacturers of 'health and beauty' products containing antioxidants), and in the synthesis of natural products, fine chemicals (pharmaceuticals, agrochemicals, etc.) and synthetic polymers. Then we turn to pericyclic reactions, particularly the Diels-Alder reaction which is arguable the most important reaction in organic chemistry. The focus of this unit is on natural products, and on how they have provided such rich chemistry (free radical and pericyclic) which has modern synthetic, biosynthetic, environmental and biological applications.

CHEM 3207 Synthetic Methods

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. **Assessment:** Exam (67%) and lab (33%).

NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)

The ability to construct complex molecules from simple building blocks is a highly sought-after skill, relevant to a diverse range of disciplines. Whether the target compounds are going to cure a disease, provide the next leap forward in computer technology, be the basis for nano-scale molecular machines or lead to new insights in molecular biology, the synthetic chemist is powerless without the ability to synthesise the desired compounds. Synthesis is inescapable!

3. Undergraduate tables and units of study

This course will highlight important general synthetic strategies and develop a logical approach to planning a synthesis of a particular target structure, including commonly employed tactics for efficient synthesis. During the course, we will continually expand the arsenal of powerful synthetic methods available and exemplify their uses. We will study a range of reagents used to effect synthetic transformations, including: hydride reducing agents for functional group reduction, organometallic reagents for carbon-carbon bond formation, phosphorus based reagents for the geometrically controlled synthesis of carbon-carbon double bonds, and enolates for the stereoselective synthesis of carbonyl containing compounds. We will focus on efficiency (how do you get the greatest amount of the desired compound in the fewest steps?), chemo- and regio-selectivity (how do you get only the reaction you want and only at the site of interest?) and stereochemistry (how do you control the absolute and relative stereochemistry of the products of various reactions?).

This course will focus on the strategy and tactics used in the synthesis of new molecular architectures. Throughout the course, new concepts and techniques will be illustrated by recent real life examples of synthesis conducted by pharmaceutical and biotechnology companies, and academic research labs around the world. Examples will be the synthesis of pharmaceuticals such as local anaesthetics, non-nucleoside anti-HIV-1 treatments and complex natural products that have recently entered clinical trials for the treatment of multi-drug resistant cancers.

CHEM 3209 Organic Structures From Spectra

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902), for BSc (Environmental) candidates CHEM (1102 or 1902) and ENV12002, for BSc(MOBT) candidates MOBT2001, MOBT2002, CHEM ((2311 and 2312) or 2903). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. Students enrolled in BSc(MOBT) are to take CHEM3203. For BSc (Environmental) students CHEM3100.. **Assessment:** exam (67%) and lab (33%).

NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BSc (Environmental) candidates CHEM (1102 or 1902) and ENV12002, for B.Sci. (MOBT) candidates MOBT2001, MOBT2002, CHEM ((2311 and 2312) or 2403 or 2903 or 2913)

This unit is all about how to interpret the spectra produced by the highly sophisticated, modern spectroscopic instruments that are present in all research and analytical laboratories. You learn, inter alia, how to put together the clues from a mass spectrum with the clues from the chemical shift and couplings in an ¹H nmr spectrum, and with the clues arising from the interactions between hydrogens and carbons in a ¹³C nmr spectrum. The unit is part lectures and part problem solving workshops.

CHEM 3290 Stereochemistry and Mechanisms (Adv)

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units.. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

The unit oversees organic chemistry from a mechanistic point of view. You first learn more about the stereochemistry of molecules, the issues of chirality, how to make chiral substances and why all this is important in biology and in the chemical laboratory. Then you see how the stereochemical changes in reactions allow you to prove unambiguously how stepwise substitution, addition and elimination reactions proceed, and finally you learn the wonderfully simple laws which explain (and allow you to predict how) concerted reactions occur.

CHEM 3293 Bioorganic Chemistry (Adv)

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units.. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

DNA, proteins and carbohydrates are the three classes of essential biomolecules that are present in all biological systems. This unit will cover the structure and chemical reactivity of the building blocks (nucleotides, amino acids and monosaccharides) from which these molecules are assembled as well as the structure and function of these biomolecules in living systems. Applications of this chemistry will be highlighted for example: sugar (sucrose) and artificial sweeteners (Nutrasweet, Splenda); fibre in the diet (what is in Metamucil and All-Bran?); the chemistry of hair, nails and enzymes; medicinally important drugs that interact with DNA (mustard gas, ethidium bromide, current clinically used chemotherapy drugs), and DNA fingerprinting .

CHEM 3294 Heterocyclic Chemistry (Adv)

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM(3195 and 3295 and 3396).. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)

Some 40% of all known organic compounds are heterocyclic and many have outstanding chemical, biological, and industrial importance. The first part of this unit deals with rings with a single heteroatom and can be regarded as a logical continuation of the aromatic chemistry of the second year units. The synthesis and reactions of five- and six-membered heterocyclic compounds, and the influence of the heteroatom will be discussed. The second part of this unit deals with heterocyclic compounds with two or more heteroatoms in the ring system including: important ring systems such as pyrimidines and purines (that are an integral part of the DNA and RNA bases); imidazole and thiazole (that are found in some amino acids and vitamins); and porphyrins (that are natural colouring substances and that are responsible for the oxygen-carrying component of blood).

CHEM 3295 Medicinal and Biological Chemistry (Adv)

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902); for BMedSc candidates: a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903); for BSc (Molecular Biology and Genetics) candidates: a high WAM and a Distinction in CHEM (2903); for BSc (MOBT) candidates: MOBT (2001 and 2002), a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3195 and CHEM 3396 and one other Semester 2 Senior Advanced Chemistry unit selected from any Group.. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916); for BMedSc candidates: a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913); for BSc (Molecular Biology and Genetics) candidates: a high WAM and a Distinction in CHEM (2903 or 2913); for BSc (MOBT) candidates: MOBT2102, a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913).

This focus of this unit is how pharmaceuticals are designed and synthesised, and how they work. No previous knowledge of biochemistry or cell biology is required or assumed.

The structures and properties of the major targets of drug action - enzymes, receptors, DNA and cell membranes - will be described in detail. The molecular basis for the therapeutic activity of various drugs will be explored, and a description of how pharmaceuticals interact with their specific biomolecular targets to confer their medicinal properties will be presented. The current arsenal of methods used in the discovery of new drugs will be highlighted, including rational drug design, random screening and combinatorial chemistry. Various case studies will be examined throughout the unit, including examples of the action of antibiotics (penicillin, vancomycin), anti-inflammatory drugs (aspirin, naproxen), cholesterol-lowering agents (Lipitor®) and anti-cancer compounds (Taxol®).

CHEM 3296 Radical and Pericyclic Chemistry (Adv)

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates a high WAM and a Distinction in CHEM (2311 and 2312) or 2903, for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM (3195 and 3295 and 3396).. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM (2311 and 2312) or 2403 or 2903 or 2913, for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)

The unit will first deal with free radicals which are ubiquitous species involved in the O₂-initiated breakdown of biological material (a radical reaction often mentioned by manufacturers of 'health and beauty' products containing antioxidants), and in the synthesis of natural products, fine chemicals (pharmaceuticals, agrochemicals, etc.) and synthetic polymers. Then we turn to pericyclic reactions, particularly the Diels-Alder reaction which is arguable the most important reaction in organic chemistry. The focus of this unit is on natural products, and on how they have provided such rich chemistry (free radical and pericyclic) which has modern synthetic, biosynthetic, environmental and biological applications.

CHEM 3297 Synthetic Methods (Adv)

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates a high WAM and a Distinction in CHEM (2311 and 2312) or 2903, for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM(3195 and 3295 and 3396).. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM (2311 and 2312) or 2403 or 2903 or 2913, for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)

The ability to construct complex molecules from simple building blocks is a highly sought-after skill, relevant to a diverse range of disciplines. Whether the target compounds are going to cure a disease, provide the next leap forward in computer technology, be the basis for nano-scale molecular machines or lead to new insights in molecular biology, the synthetic chemist is powerless without the ability to synthesise the desired compounds. Synthesis is inescapable! This course will highlight important general synthetic strategies and develop a logical approach to planning a synthesis of a particular target structure, including commonly employed tactics for efficient synthesis. During the course, we will continually expand the arsenal of powerful synthetic methods available and exemplify their uses. We will study a range of reagents used to effect synthetic transformations, including: hydride reducing agents for functional group reduction, organometallic reagents for carbon-carbon bond formation, phosphorus based reagents for the geometrically controlled synthesis of carbon-carbon double bonds, and enolates for the stereoselective synthesis of carbonyl containing compounds. We will focus on efficiency (how do you get the greatest amount of the desired compound in the fewest steps?), chemo- and regio-selectivity (how do you get only the reaction you want and only at the site of interest?) and stereochemistry (how do you control the absolute and relative stereochemistry of the products of various reactions?).

This course will focus on the strategy and tactics used in the synthesis of new molecular architectures. Throughout the course, new concepts and techniques will be illustrated by recent real life examples of synthesis conducted by pharmaceutical and biotechnology companies, and academic research labs around the world. Examples will be the synthesis of pharmaceuticals such as local anaesthetics, non-nucleoside anti-HIV-1 treatments and complex natural products that have recently entered clinical trials for the treatment of multi-drug resistant cancers.

CHEM 3299 Organic Structures From Spectra (Adv)

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at

least one unit from Groups 1 and 3. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. Not available to BSc (MOBT) students.. **Assessment:** Exam (67%) and lab+advanced seminars (33%). *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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)*

This unit is all about how to interpret the spectra produced by the highly sophisticated, modern spectroscopic instruments that are present in all research and analytical laboratories. You learn, inter alia, how to put together the clues from a mass spectrum with the clues from the chemical shift and couplings in an ¹H nmr spectrum, and with the clues arising from the interactions between hydrogens and carbons in a ¹³C nmr spectrum. The unit is part lectures and part problem solving workshops.

Group 3**CHEM 3301 Quantum Chemistry**

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units.. **Assessment:** Exam (67%) and lab (33%).

NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

Quantum Theory provides the theory and the tools for the study and understanding of chemical processes at the microscopic level of electrons, nuclei and their interactions. This unit focuses on the development of a sound understanding of basic quantum chemical concepts such as the Schrödinger wave equation, quantum mechanical operators and wave functions and their interpretation. The techniques are applied to (a) the study of simple model systems, that illustrate fundamental quantum phenomena such as quantization, tunnelling and covalent bonding, (b) the description of atomic and molecular electronic structure, and (c) the role of symmetry and its use in molecular orbital theory.

CHEM 3302 Chemical Dynamics

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units.. **Assessment:** Exam (67%) and lab (33%).

NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

This unit begins with the fundamentals of dynamics of molecular collisions, reactions on potential energy surfaces, transition states and how we may obtain information about the actual mechanism of reactions at the microscopic level. Important applications of chemical dynamics are then discussed including chain reactions, explosions and flames, oscillating chemical reactions and the approach to chemical chaos.

CHEM 3303 Surfaces and Colloids

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units.. **Assessment:** Exam (67%) and lab (33%).

NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

Surface chemistry can occur any time two phases - solid, liquid, or gas - are in contact. Many important chemical, physical and biological processes occur at surfaces rather than inside the bulk phases with which we are more familiar. This module introduces the concepts of surface tension, adsorption, and the electrical double-layer and uses them to understand important applications. Examples will be drawn from liquid spreading, adhesion, nucleation of new phases, catalysis, coagulation of dispersions and detergency.

CHEM 3304 Principles of Spectroscopy

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units.. **Assessment:** Exam (67%) and lab (33%).

NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

3. Undergraduate tables and units of study

The interaction of light and matter is fundamental. It forms the basis of nearly every observation we make about chemical phenomena from the simple (this substance is yellow) to the complicated (structure determination by 2D NMR spectroscopy). This course will treat all spectroscopies as a unified phenomenon, from long wavelengths (NMR) through to millimeter-wave rotational spectroscopy, infrared (vibrational) and optical (electronic) spectroscopy and on into the deep vacuum ultraviolet and X-ray regimes. This course equips the student with an armoury of knowledge facilitating a fundamental understanding and rationalization of all phenomena involving the interaction of radiation and matter.

CHEM 3305 Atmospheric and Photochemistry

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BSc (Environmental) candidates CHEM (1102 or 1902) and ENVI 2002, for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. For BSc (Environmental) candidates CHEM 3105. **Assessment:** Exam (67%) and lab (33%).
NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BSc (Environmental) candidates CHEM (1102 or 1902) and ENVI 2002, for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)

This unit will examine the chemistry of species emitted into the atmosphere leading to an understanding of i) photochemical smog, ii) stratospheric ozone depletion, and iii) the "Greenhouse effect". Specific topics to be covered include: the structure of the atmosphere, brief review of spectroscopy and kinetics, chemistry of the 'natural' atmosphere, chemistry of the polluted troposphere, nighttime chemistry, stratospheric chemistry / ozone depletion, global warming and the greenhouse effect.

CHEM 3306 Biophysical Chemistry

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902); for BMedSc candidates: Credit in CHEM ((2311 and 2312) or 2903); for BSc (Molecular Biology and Genetics) candidates: CHEM2903; for BSc (MOBT) candidates: MOBT (2001 and 2002), and CHEM ((2311 and 2312) or 2903). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and one other Semester 2 Senior Chemistry unit selected from any Group. **Assessment:** Exam (67%) and lab (33%).
NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916); for BMedSc candidates: Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913); for BSc (Molecular Biology and Genetics) candidates: CHEM (2903 or 2913); for BSc (MOBT) candidates: MOBT2102, and CHEM ((2311 and 2312) or 2403 or 2903 or 2913).

Much of biochemistry deals with physical interactions and communication between biological molecules. Examples of this include protein folding and unfolding, transport across cell membranes, nerve impulse propagation and muscle contraction. In this unit we explore how these complex phenomena arise from familiar electrostatic, hydrogen bonding, hydrophobic and other chemical interactions. We shall also discuss modern physical techniques for their further investigation and the underlying physical principles involved.

CHEM 3307 Polymer Chemistry

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. **Assessment:** Exam (67%) and lab (33%).
NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)

Natural and synthetic polymers are inseparable parts of our everyday lives. This module describes the mechanisms of polymer formation and how molecular architecture affects the physical properties of a polymer. Topics include traditional and novel means of polymer synthesis (free radical, ionic, condensation, RAFT), the corresponding kinetics and molecular weights, the molecular-level description of polymer cohesion, hardness and softness (the glass transition), conducting polymers, and the intelligent design of new polymers. The environmental impact of polymers will also be discussed.

CHEM 3308 Physical Chemistry of Materials

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3105 and 3205 and 3306. **Assessment:** Exam (67%) and lab (33%).
NB: From 2006 the prerequisites will be: CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916), for BMedSc candidates Credit in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates CHEM (2903 or 2913)

One of the most tangible impacts of chemistry in our daily lives is in the macroscopic properties of materials. This unit will provide an introduction to the chemistry of material properties. A number of properties will be selected from among the following: viscosity, diffusion, thermal conductivity, electrical conductivity, elastic moduli, yield stress and toughness. The microscopic origins of the selected properties will then be examined in the context of a selected class of materials. Possible material classes include polymers, ceramics, metals and dielectrics (including semiconductors).

CHEM 3391 Quantum Chemistry (Adv)

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. **Assessment:** Exam (67%) and lab+advanced seminars (33%).
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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

Quantum Theory provides the theory and the tools for the study and understanding of chemical processes at the microscopic level of electrons, nuclei and their interactions. This unit focuses on the development of a sound understanding of basic quantum chemical concepts such as the Schrödinger wave equation, quantum mechanical operators and wave functions and their interpretation. The techniques are applied to (a) the study of simple model systems, that illustrate fundamental quantum phenomena such as quantization, tunnelling and covalent bonding, (b) the description of atomic and molecular electronic structure, and (c) the role of symmetry and its use in molecular orbital theory.

CHEM 3392 Chemical Dynamics (Adv)

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. **Assessment:** Exam (67%) and lab+advanced seminars (33%).
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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

This unit begins with the fundamentals of dynamics of molecular collisions, reactions on potential energy surfaces, transition states and how we may obtain information about the actual mechanism of reactions at the microscopic level. Important applications of chemical dynamics are then discussed including chain reactions, explosions and flames, oscillating chemical reactions and the approach to chemical chaos.

CHEM 3393 Surfaces and Colloids (Adv)

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Prerequisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. **Assessment:** Exam (67%) and lab+advanced seminars (33%).
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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

Surface chemistry can occur any time two phases - solid, liquid, or gas - are in contact. Many important chemical, physical and biological processes occur at surfaces rather than inside the bulk phases

with which we are more familiar. This module introduces the concepts of surface tension, adsorption, and the electrical double-layer and uses them to understand important applications. Examples will be drawn from liquid spreading, adhesion, nucleation of new phases, catalysis, coagulation of dispersions and detergency.

CHEM 3394 Principles of Spectroscopy (Adv)

3 credit points. **Session:** Semester 1. **Classes:** One 1hr lecture & 2hr prac/wk. **Pre-requisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2901 or 2903) and CHEM (2302 or 2902). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. **Assessment:** Exam (67%) and lab+advanced seminars (33%).
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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916)

The interaction of light and matter is fundamental. It forms the basis of nearly every observation we make about chemical phenomena from the simple (this substance is yellow) to the complicated (structure determination by 2D NMR spectroscopy). This course will treat all spectroscopies as a unified phenomenon, from long wavelengths (NMR) through to millimeter-wave rotational spectroscopy, infrared (vibrational) and optical (electronic) spectroscopy and on into the deep vacuum ultraviolet and X-ray regimes. This course equips the student with an armoury of knowledge facilitating a fundamental understanding and rationalization of all phenomena involving the interaction of radiation and matter.

CHEM 3395 Atmospheric and Photochemistry (Adv)

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Pre-requisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3195 and 3295 and 3396. **Assessment:** Exam (67%) and lab+advanced seminars (33%).
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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)

This unit will examine the chemistry of species emitted into the atmosphere leading to an understanding of i) photochemical smog, ii) stratospheric ozone depletion, and iii) the "Greenhouse effect". Specific topics to be covered include: the structure of the atmosphere, brief review of spectroscopy and kinetics, chemistry of the 'natural' atmosphere, chemistry of the polluted troposphere, nighttime chemistry, stratospheric chemistry / ozone depletion, global warming and the greenhouse effect.

CHEM 3396 Biophysical Chemistry (Adv)

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Pre-requisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902); for BMedSc candidates: a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903); for BSc (Molecular Biology and Genetics) candidates: a high WAM and a Distinction in CHEM2903; for BSc (MOBT) candidates: MOBT (2001 and 2002), a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903). **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3195 and 3295 and one other Semester 2 Senior Advanced Chemistry unit selected from any Group. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916); for BMedSc candidates: a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913); for BSc (Molecular Biology and Genetics) candidates: a high WAM and a Distinction in CHEM (2903 or 2913); for BSc (MOBT) candidates: MOBT2102, a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913).

Much of biochemistry deals with physical interactions and communication between biological molecules. Examples of this include protein folding and unfolding, transport across cell membranes, nerve impulse propagation and muscle contraction. In this unit we explore how these complex phenomena arise from familiar electrostatic, hydrogen bonding, hydrophobic and other chemical interactions.

We shall also discuss modern physical techniques for their further investigation and the underlying physical principles involved.

CHEM 3397 Polymer Chemistry (Adv)

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Pre-requisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3195 and 3295 and 3396. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)

Natural and synthetic polymers are inseparable parts of our everyday lives. This module describes the mechanisms of polymer formation and how molecular architecture affects the physical properties of a polymer. Topics include traditional and novel means of polymer synthesis (free radical, ionic, condensation, RAFT), the corresponding kinetics and molecular weights, the molecular-level description of polymer cohesion, hardness and softness (the glass transition), conducting polymers, and the intelligent design of new polymers. The environmental impact of polymers will also be discussed.

CHEM 3398 Physical Chemistry of Materials (Adv)

3 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture & 2hr prac/wk. **Pre-requisites:** By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903) and CHEM (2302 or 2902), for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2903), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM2903. **Corequisites:** Either 1, 3, 5 or 7 other Senior Chemistry units of study. Students taking 3, 5 or 7 other Senior Chemistry units are to select units from Groups 1-3 including at least one unit from Groups 1 and 2. Students taking one other Senior Chemistry unit have no restriction placed on their selection of Senior Chemistry units. For BMedSc and BSc (MBG) candidates CHEM 3195 and 3295 and 3396. **Assessment:** Exam (67%) and lab+advanced seminars (33%).

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 on available places. From 2006 the prerequisites will be: By invitation. High WAM and a Distinction average in CHEM (2001 or 2101 or 2301 or (2311 and 2312) or 2401 or 2901 or 2903 or 2911 or 2913 or 2915) and CHEM (2302 or 2402 or 2902 or 2912 or 2916) for BMedSc candidates a high WAM and a Distinction in CHEM ((2311 and 2312) or 2403 or 2903 or 2913), for BSc (Molecular Biology and Genetics) candidates a high WAM and a Distinction in CHEM (2903 or 2913)

One of the most tangible impacts of chemistry in our daily lives is in the macroscopic properties of materials. This unit will provide an introduction to the chemistry of material properties. A number of properties will be selected from among the following: viscosity, diffusion, thermal conductivity, electrical conductivity, elastic moduli, yield stress and toughness. The microscopic origins of the selected properties will then be examined in the context of a selected class of materials. Possible material classes include polymers, ceramics, metals and dielectrics (including semiconductors).

Chemistry Honours

Dr C J Keprt

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, from the Administrative Officer (Academic), or at www.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 (6 credit points) and CIVL2230 - Introduction to Structural Concepts and Design (6 credit points). Details regarding these units of study can be obtained from the Faculty of Engineering Handbook.

The above units of study are intended first to demonstrate the application of scientific principles in an engineering context so that the science student will gain an understanding of the engineering behaviour of materials and engineering structures. The second intention is to introduce the application of this understanding to the analysis and design of engineering structures.

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 pre-requisites.

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. **Session:** Semester 2. **Classes:** one 1hr lecture, one 2hr practical. **Assumed Knowledge:** HSC Mathematics. **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. **Session:** Semester 2. **Classes:** one 1hr 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). **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. **Session:** Semester 2. **Classes:** one 1hr lecture, one 2hr practical. **Assumed Knowledge:** HSC Mathematics. **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. **Session:** Semester 2. **Classes:** one 1hr 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). **Assessment:** Two assignments (20%), practical work, including practical exam (40%), theory exam (40%).

This unit of study is the advanced version of COSC1002 and is complementary to COSC1901. 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.

COSC 3001 Scientific Computing

4 credit points. **Session:** Semester 1. **Classes:** 2 lectures & a two hour practical/week. **Assumed Knowledge:** Programming experience in MATLAB. **Prerequisites:** 12 credit points chosen from Junior Mathematics and Statistics, 16 credit points of Intermediate units in Science subject areas. **Assessment:** Assignment work, practical exam, 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 demographics, neutron criticality, traffic flow and quantum mechanics. All coding is performed with MATLAB, and basic programming experience is assumed.

COSC 3901 Scientific Computing (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** 2 lects & two hour practical/week. **Assumed Knowledge:** Programming experience in C and MATLAB. **Prerequisites:** 12 credit points chosen from Junior Mathematics and Statistics and 16 credit points of Intermediate units in Science subject areas with a Credit average. **Assessment:** Assignment work, practical exam, written exam.

This unit is the advanced version of COSC3001. The subject matter is very similar, but more challenging problems will be covered

COSC 3002 Parallel Computing and Visualisation

4 credit points. **Session:** Semester 2. **Classes:** 2 lects & a two hour practical/week. **Assumed Knowledge:** Programming experience in C and MATLAB or equivalent. **Prerequisites:** 12 credit points from the Science subject areas of Junior Mathematics and Statistics and 16 credit points of Intermediate units in Science subject areas. **Assessment:** Assignment work, practical exam, written 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 3902 Parallel Computing & Visualisation (Adv)

4 credit points. **Session:** Semester 2. **Classes:** 2 lects & a two hour practical/week. **AssumedKnowledge:** Programming experience in C and MATLAB or equivalent. **Prerequisites:** 12 credit points from the Science subject areas of Junior Mathematics and Statistics and 16 credit points, average grade Credit, of Intermediate units in Science subject areas. **Assessment:** Assignment work, practical exam, written exam. This unit is the advanced version of COSC3002. The subject matter is very similar, but more challenging problems will be covered..

COSC 3701 Computational Science Project

8 credit points. Dr Mike Wheatland. **Session:** Semester 2. **Classes:** 1hr meeting with supervisor and 7hr project work/wk; 3-4 introductory lectures given by supervisor. **AssumedKnowledge:** Able to program in a standard language. **Prerequisites:** 16 credit points of intermediate level natural sciences plus at least one of COSC (1001 or 1901 or 1002 or 1902) or SOFT (1001 or 1901) or MATH (2003 or 2903) or PHYS (2001 or 2901 or 2002 or 2902). **Assessment:** Quality of proposal (10%), application (50%), and report (40%). The assessment is done at a group level (each group comprises several students) for quality of proposal and application, and at the individual level for the report. This unit of study is building on a real-case scenario involving an IT company and its clients, employers and employees. The client (i.e., a university researcher with an interest in Computational Science outside bioinformatics - see BINF3001 for bioinformatics projects) contacts the company with the aim to obtain a Computational Science application that will assist him/her in a pursuit of new avenues of research and service provision. Terms of reference are drafted with the project managers (i.e., the academics responsible for delivering the unit of study) of the IT company, and are then presented to a small group of employees (i.e., the students), who design and implement a plan of how to write and deliver the software.

Environmental Science

Bachelor of Science (Environmental) Junior units of study

ENVI 1002 Geomorphic Environments

6 credit points. Dr Stephen Gale. **Session:** Semester 1. **Classes:** 3 lec & 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.

Bachelor of Science (Environmental) Intermediate units of study

You must complete both Environmental Science Intermediate units of study (ENVI 2111 and ENVI 2112).

ENVI 2111 Conservation Biology and Applied Ecology

6 credit points. Dr Dieter Hochuli. **Session:** Semester 1. **Classes:** 3 lec and 2 prac/week. **Prerequisites:** 24 credit points of Junior Science units, including 12 credit points of Junior Biology. **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. Prof Peter Davies, Dr Chris Dey. **Session:** Semester 2. **Classes:** 3 lec and 2 prac/week. **Prerequisites:** 24 credit points of Junior Science units, including 12 credit points of Junior Chemistry or Physics. **Assessment:** Assignments, tute papers, exam. **NB:** This unit of study is available to students in the Bachelor of Science (Environmental) only. 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.

Bachelor of Science (Environmental) Senior units of study

You must complete both Environmental Science Senior units of study (ENVI 3001 and 3002). Environmental Science 3 builds on foundations laid by the Intermediate Environmental Science units of study to provide the integration of scientific and other aspects of environmental problem-solving and professional responsibilities.

ENVI 3001 Environmental Law and Planning

12 credit points. Dr John Dee. **Session:** Semester 1. **Classes:** 8 lec/wk; 3 field-units. **Prerequisites:** ENVI 2001 and 2002. **Assessment:** Continual assessment throughout the semester by essay, report and prac assignments. **NB:** This unit of study is available to students in the Bachelor of Science (Environmental) and the Bachelor of Science (Marine Science) only. ENVI 3001 covers topics and issues in environmental ethics, law, resource economics, planning, regulation and management for the built and natural environments, and energy production and alternate processes. This is an intensive unit of study that examines issues not normally considered "environmental" but which impact to a large degree on how we interact with our environment.

ENVI 3002 Environmental Assessment

12 credit points. Dr John Dee. **Session:** Semester 2. **Classes:** 8 lec & 4 prac/tut/wk. **Prerequisites:** ENVI 2001 and 2002. **Assessment:** Continual assessment throughout the semester by essay, report and prac assignments. **NB:** This unit of study is available to students in the Bachelor of Science (Environmental) and the Bachelor of Science (Marine Science) only. ENVI 3002 covers all issues concerning environmental impact assessment, including topics in conservation, risk assessment and ecotoxicology, as well as providing an examination of the logical structure of environmental sampling. The latter introduces the theory of sampling design for measurements at different scales of biological systems, statistical analysis of data and the interpretation of magnitude and scale of environmental disturbances, with topics including the nature of variables, univariate and multivariate measures, correlation of environmental variables and interpretation of data.

ENVI 3003 Law and the Environment

4 credit points. **Session:** Semester 1. **Classes:** 3 lec/wk. **Prerequisites:** Entry by permission of Course Coordinator only. **Assessment:** Continual throughout semester. **NB:** Department permission required for enrolment. This unit of study is available to Study Abroad students and students enrolled in the Bachelor of Science (Marine Science), Bachelor of Resource Economics and Bachelor of Land & Water Science only. This unit encompasses the core material of ENVI 3001 and covers topics in environmental ethics, law, planning, regulation and management for the built and natural environments.

ENVI 3004 Environmental Impact Assessment

4 credit points. **Session:** Semester 2. **Classes:** 3 lec/wk. **Prerequisites:** Entry by permission of Course Coordinator only. **Assessment:** Continual throughout semester. **NB:** Department permission required for enrolment. This unit of study is available to Study Abroad students and students enrolled in the Bachelor of Science (Marine Science), Bachelor of Resource Economics and Bachelor of Land & Water Science only. This unit encompasses the core material provided in ENVI 3002 and covers topics in environmental impact and risk assessment.

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 import-

3. Undergraduate tables and units of study

ant 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 offers units of study in the three discipline areas of Geography, Geology and Geophysics. Students may take a major in any one of these three disciplines. The School 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. Students who wish to obtain additional advice about the units of study described below should approach departmental advisors during the enrolment week or the unit coordinators during semester. Further information is available on the internet at www.es.usyd.edu.au, as well as in the Geosciences' student handbook which is available from the School's administrative offices.

Geography

Geography is a varied and versatile area of study covering a broad spectrum of knowledge. It was once concerned principally with the description of the earth's surface, but modern geography now embraces society's relationship with the earth within a scientific and highly-structured framework. Students can enrol in Units of Study that focus on physical, human or environmental geography - the three main sub-disciplines of Geography. Physical geography deals with phenomena such as landforms, plants and soil as elements of physical landscapes and the processes that control the formation and distribution of these phenomena. Human geography investigates the variety of spatial distributions of human populations as well as the social and economic issues they confront. Environmental geography is concerned with impacts of human land-uses and resource exploitation on the natural physical environment and seeks to evaluate the relative contributions of human impacts and natural processes in environmental change.

Geography Junior units of study

Geography offers two Junior units of study: Geography 1001 in the February Semester and Geography 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. Morning lectures are repeated in the afternoon.

GEOG 1001 Biophysical Environments

6 credit points. Assoc. Prof. Short, Dr Gale. **Session:** Semester 1. **Classes:** 3 lec & 3hr prac/wk. **Assessment:** One 2hr exam, 1500w report, prac assignments.

This unit of study provides an introduction to the earth's biophysical environments. 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. Prof. Connell & Dr W Pritchard. **Session:** Semester 2. **Classes:** 3 lec & 3hr prac/wk. **Assessment:** One 2hr exam, 2000w essay, prac exercises.

Human Environments develops understanding of processes and consequences of interactions among people and between people and their environments. Questions, challenges and issues that stem from the relationships and transformations in the built, natural, social and spatial environments are introduced and scrutinised. Social structures and development are explored and principles of human geography are presented through study of the location and distribution of eco-

nomic activities with special reference to Australia and the Asia-Pacific region.

Geography Intermediate units of study

Six Intermediate Geography units of study are offered in the subject's three sub-disciplines. The streams and their units of study are:

Physical Geography and Geomorphology - GEOG 2311 and 2321

Environmental - GEOG 2411 and 2421

Human - GEOG 2511 and 2521

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

Students who have completed the Junior Geography and Junior Environmental Science prerequisites may elect to do units of study in one or two of these streams:

To complete Intermediate Geography, a student is advised to select at least two Intermediate Geography units of study. A student would normally select two sequential units of study from one of the three streams (Physical Geography and Geomorphology, Environmental, Human). However, students may vary the sequence of units of study between streams and options within units of study, with the permission of the Head of Department. Not all units of study may be offered in any given year.

GEOG 2311 Landscape Processes

6 credit points. A/Prof Deirdre Dragovich, Professor Andy Short. **Session:** Semester 1. **Classes:** (2 lec, 2 prac)/wk, fieldwork. **Prerequisites:** 36cp of Junior units of study, including GEOG1001 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. **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. Dr Melissa Neave (School of Geosciences), Dr Willem Vervoort (Faculty of Agriculture, Food and Natural Resources). **Session:** Semester 2. **Classes:** 2 lec & 1 2 or 3 hour prac per week. **Prerequisites:** GEOG(2311 or 2001) or 36 credit points of Junior study including GEOG1001 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 ENVI1001, 12 credit points of Chemistry, 6 credit points of Biology, BIOM1002. **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. A/Prof Deirdre Dragovich, Dr Eleanor Bruce. **Session:** Semester 1. **Classes:** (2 lec, 2 prac)/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). **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. A/Prof Philip Hirsch, Dr Philip McManus. **Session:** Semester 2. **Classes:** (2 lec, 1 tut, 1 prac)/wk; fieldwork. **Prerequisites:** 36cp of Junior Units of Study, including GEOG (1001 or 1002) or ENVI (1001 or 1002). **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. Dr Bill Pritchard. **Session:** Semester 1. **Classes:** (2 lec, 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). **Assessment:** One 2 hr exam; 2000w essay, tutorial papers, prac reports.

In this unit of study, students will be introduced to questions and debates about spatial character of economic and political activities. This includes the issues of why economic development is uneven between places and regions, how entities such as large corporations spatially organize themselves in order to further their goals, and how to assess the impacts of globalisation. Lecture and practical material will be organized in such a way that students are encouraged to connect theories with contemporary 'real world' economic and political issues. These include debates on regional development planning, industrial clustering, the role of the global financial sector, trade liberalization and the World Trade Organisation. As a component of the Human Geography stream, 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. Prof John Connell, Dr Kurt Iveson. **Session:** Semester 2. **Classes:** (2 lec, 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). **Assessment:** One 2 hr exam, 2000w essay, prac reports.

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

Geography offers seven Senior units of study in 3 streams -- namely geomorphology, environmental geography and human geography. The streams and their units of study are:

Geomorphology -- GEOG 3002

Environmental -- GEOG 3101 and 3521

Human -- GEOG 3511 and 3522

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

Students who have completed the Intermediate Geography prerequisites may elect to do units of study in one or two of these streams.

To complete Senior Geography, a student must select two units of study. Each unit of study is 12 credit points. A student would normally select two sequential units of study from one of the three streams (Geomorphology, Environmental and Human). However, students may vary the sequence of units of study between streams and options within units of study with the permission of the Head of Department. Not all units of study may be offered in any given year.

Geography Senior Unit of Study Combinations

48 credit points

Students may elect to do four Senior units of study (12 credit points each) in the one year, giving a total of 48 credit points. Such students will be required to enrol in two of the Senior Geography Streams, Geomorphology, Environmental or Human. Those who have passed at least two of the Senior Geography units of study at Honours level may proceed to an appropriate unit of study in Geography Honours. Those choosing physical honours topics must have majored in the Geomorphology stream units of study.

GEOG 3002 Environmental Geomorphology

12 credit points. A/Prof D Dragovich, Dr S Gale. **Session:** Semester 2. **Classes:** (3 lec, 6 prac)/wk; fieldwork. **Prerequisites:** GEOG (2001 or 2002 or 2101 or 2302 or 2303). **Assessment:** One 2hr exam, two 1500w essays, prac and field reports. **NB:** From 2006 the prerequisites will be: 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography Units of Study.

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.

GEOG 3101 Catchment Management

12 credit points. Lecturers to be advised. **Session:** Semester 1. **Classes:** (3 lec, 1 tut, 8 prac)/wk; fieldwork. **Prerequisites:** GEOG (2001 or 2002 or 2101 or 2302 or 2303) and GEOG (2102 or 2201 or 2202). **Assessment:** One 2hr exam, two 1500w essays. **NB:** From 2006 the prerequisites will be: 24 credit points of Intermediate Units of Study including 6 credit points of Intermediate Geography Units of Study.

Senior Environmental stream

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.

GEOG 3201 Asia-Pacific Field School

12 credit points. Prof J Connell. **Session:** S1 Intensive. **Classes:** 28 lectures and 100 hours of tuts, prac and fieldwork. **Prerequisites:** GEOG (2101 or 2102 or 2201 or 2202). **Assessment:** One 2hr exam, two 2000w essays, tut papers, prac and fieldwork reports.

NB: From 2006 the prerequisites will be: 24 credit points of Intermediate units of study including 6 credit points of Intermediate Geography units of study.

The unit of study builds on key human geographic principles from the sub-disciplines of environmental, social, cultural and economic geography. The unit of study constitutes a field work school run over a five- week period in January-February, prior to the commencement of the semester. The Field School is held in Vanuatu and Fiji. It is run in close association with the University of the South Pacific, whose staff and students participate in some components of the course. It focuses on environmental and development issues in the context of rapid change, especially in the urban context.

3. Undergraduate tables and units of study

GEOG 3511 Spatial Change in Australian Society

6 credit points. Dr Bill Pritchard. **Session:** Semester 1. **Classes:** 2 lec + 2 prac/tut per week. **Prerequisites:** 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **Assessment:** One 2 hr exam; 2000w essay, tutorial papers, prac reports.

The aim of this unit of study is to provide students with the conceptual, analytical and technical skills to examine key debates relating to changing spatial patterns in Australia's population and economy. Through this focus, the unit will examine social and economic sustainability, including topics such as the 'triple bottom line', social capital, the impacts of de-industrialisation, 'new economies' of the service sector, Indigenous rights, and the economic and social impacts of large resource developments. Practical classes will make extensive use of Geographic Information Systems (GIS) in order to access and interpret data from the 2001 Population Census, however no pre-existing knowledge about GIS is required for this unit.

Textbooks

Beer, A., Maude, A. & Pritchard, B. (2003) Developing Australia's Regions (UNSW Press, Sydney).

GEOG 3521 Sustainable Cities

6 credit points. Dr Phil McManus. **Session:** Semester 2. **Classes:** 2 lec + 2 prac/tut per week. **Prerequisites:** 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **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 3522 Globalisation and Regions in Transition

6 credit points. Assoc Prof Phil Hirsch. **Session:** Semester 2. **Classes:** 2 lec + 1 tut and 2-hr prac/wk (8 only). **Prerequisites:** 24 credit points of Intermediate Units of study including 6 credit points of Intermediate Geography units of study. **Assessment:** One 2 hr exam; e-Sim assignments, tutorial papers.

This unit of study examines globalisation and its specific place-based manifestations. The unit takes an engaged approach to working between theoretical debates and empirical evidence. Issues covered include the role of globalisation as both an agent of change and a point of challenge; contestation over the future of the nation state; interplays between the global and the local; and the roles of geographical scale as an organizing vehicle for social and economic processes. The unit emphasises ways in which these issues are manifested both in Australia and in the Asia-Pacific. A defining feature of Globalisation and Regions in Transition is its delivery in part through an experiential web-based electronic simulation / role-play exercise (e-Sim), employing an award-winning teaching approach co-developed by the School of Geosciences. The e-Sim is run over a period of six weeks, forms a major part of the assessment and is run in parallel with lectures and tutorials.

Geography Honours

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

Geology 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.

GEOLOGY 1001 Earth and its Environment

6 credit points. Prof P Davies (Co-ordinator). **Session:** Semester 1. **Classes:** 3 lec & prac or tut/wk. **AssumedKnowledge:** No previous knowledge of Geology assumed. **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 and an assessment made of our own impact on the Earth together with the role of geologists in protecting and monitoring the environment. Students will learn techniques and types of observations 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.

GEOLOGY 1002 Earth Processes and Resources

6 credit points. Dr Tom Hubble (Co-ordinator). **Session:** Semester 2. **Classes:** 3 lec & prac or tut/wk. **AssumedKnowledge:** No previous knowledge of Geology assumed. **Assessment:** One 2hr exam, class and field work.

The aim of this unit of study is to examine the chemical and physical processes involved in mineral formation, the interior of the Earth, 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. 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 the Hunter Valley. Students will be required to pay hostel accommodation for one night on the Hunter Valley excursion.

GEOLOGY 1902 Earth Materials and Resources (Advanced)

6 credit points. Dr Geoff Clarke. **Session:** Semester 2. **Classes:** (3 lec, 3 pracs)/wk, fieldwork. **AssumedKnowledge:** No previous knowledge of Geology assumed. **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 GEOL1001 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 GEOL1002 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 and Senior Geology units of study build on the preceding Junior units of study to present a balanced and wide ranging coverage of resource geology, environmental geology and marine geology. Geology and Geophysics offers six Intermediate units of study: GEOL 2111, GEOL 2911 and GEOL 2112 in the February Semester and GEOL 2123, GEOL 2923 and GEOL 2124 in the July Semester. Each unit of study consists lectures and assigned work (which may consist of tutorials, practicals, individual course work and/or field work). All students taking GEOL 2111/2911 and 2123 are required to attend compulsory field excursions that are held within the semester.

GEOLOGY 2111 Volcanic Hazards and Solutions

6 credit points. 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. **Prerequisites:** GEOL1002 or ENVI1001 or by special permission if the student has completed (the HSC course in Earth and Environmental Science and 24 credit points of Junior Science units of study). **Assessment:** One 2 hour exam, prac reports, group presentation.

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 in Asia, Australia, and the South-West Pacific. The main topic covered in the unit is the strategies used to identify, predict and mitigate the primary and secondary hazards associated with volcanism. The unit of study has an emphasis on developing a thorough knowledge of the analytical techniques and methods applied to evaluating the hazards associated with these phenomena as well as providing students with the fundamental geochemical and geological knowledge required to interpret the data collected during these investigations. The unit includes a two- to three-day field trip to study volcanic rocks in NSW.

Textbooks

Printed notes are available.

GEOL 2112 Environmental Geology and Climate Change

6 credit points. Dr Gavin Birch, Prof Peter Davies. **Session:** Semester 1. **Classes:** (2 lec, 2 prac)/wk, fieldwork. **Prerequisites:** 24 credit points of Science units of study. **Assessment:** One 2 hr exam, prac reports, 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. A/Prof Geoffrey Clarke. **Session:** Semester 2. **Classes:** (2 lec, 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 or 1501) and 18 credit points of Engineering or Science units of study. **Assessment:** One 2 hour exam, prac reports, field report.

This unit of study further develops the ability of students to perform geological investigations and expands their knowledge of the range of techniques available to collect and interpret geological and geophysical data. Students will enhance their understanding of some common geological environments and the basic physical, chemical and biological processes that form sedimentary rocks, metamorphic rocks, and natural resources. This knowledge and understanding will then be applied to developing three-dimensional geological models of particular sites and solving geological problems in the field and laboratory. The unit will include a five-day excursion to the Canberra area.

GEOL 2124 Fossils and Time

6 credit points. A/Prof Dietmar Müller, Dr Julie Dickinson. **Session:** Semester 2. **Classes:** (2 lec, 2 hr prac)/wk. **Prerequisites:** 24 credit points of Junior Science units of study. **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 modern 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. Dr Derek Wyman. **Session:** Semester 1. **Classes:** (2 lec, 2 prac)/wk, fieldwork. **Prerequisites:** GEOL (1002 or 1902) or ENVI1001. **Assessment:** One 2 hour exam, prac reports, group presentation.

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 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. Dr Geoff Clarke. **Session:** Semester 2. **Classes:** (2 lec, 2 prac)/wk, fieldwork. **Prerequisites:** GEOL2111 or GEOL2911. **Assessment:** One 2 hour exam, prac and field reports, group presentation.

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 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).

Geology and Geophysics Senior units of study

To complete a major in Geology or in Geophysics students are required to complete a minimum of 24 credit points from the relevant subject area. Each unit of study consists of three lectures and the equivalent of nine hours assigned work per week, which may comprise practical classes, seminars, individual course work and/or fieldwork. Some units of study have compulsory field excursions, commonly held in semester breaks.

Students who desire a general background in Geology and/or Geophysics for a career in government, education, resources law, commodity economics and management, or environmental earth science can construct their own stream consisting of any grouping of units of study, within the limits of the timetable. The following suggestions focus seven streams that target vocational training for graduates seeking employment in: Mineral Exploration; Petroleum Exploration; Exploration/Mining, Engineering and Environmental Geophysics; Marine Geology, Marine Geophysics; Environmental Geology and Geocomputing.

Recommended Geology Streams:

Mineral Exploration: GEOS 3003, GEOS 3004, GEOS 3006, GEOS 3007, GEOS 3008

Petroleum Exploration: GEOS 3004, MARS 3005, MARS 3006, MARS 3008, MARS 3106

Marine Geology: MARS 3105, MARS 3005, MARS 3006, MARS 3008, MARS 3106

Environmental Geology: GEOS 3005, GEOS 3007, MARS 3105, MARS 3005, MARS 3008

Geocomputing - Geology: GEOS 3003, GEOS 3006, GEOS 3007, MARS 3105, MARS 3005, MARS 3006

Recommended Geophysics Streams:

Exploration, Mining, Engineering and Environmental Geophysics: GEOS 3003, GEOS 3004, GEOS 3008, MARS 3105, MARS 3005, MARS 3006

Marine Geophysics: MARS 3105, MARS 3106, MARS 3005, MARS 3006, MARS 3008

Geocomputing - geophysics: GEOS 3003, GEOS 3004, GEOS 3007, MARS 3105, MARS 3005, MARS 3006

To complete Senior Geology & Geophysics, a student must complete a minimum of four units of study in either Geology or Geophysics (24 credit points - see Table 1 of the Faculty of Science Handbook for more detail). Students may elect to complete up to eight Senior units of study (6 credit points each) in one year, giving a total of 48 credit points.

Students who have passed at least four of the Senior units of study in Geology or Geophysics with a Credit average or above may proceed to the appropriate units of study in Geology or Geophysics Honours.

GEOS 3003 Structural Geology: The Dynamic Crust

6 credit points. Dr Patrice Rey. **Session:** Semester 1a. **Classes:** (12 hrs of lecs & pracs)/wk. **Prerequisites:** GEOL2002 or CIVL2409. **Assessment:** 2 hr theory exams, class work and E-report.

NB: From 2006 the prerequisites will be: GEOL (2002 or 2123) or CIVL2409

The Earth's crust hosts mineral and energy resources that have sustained our civilisation over the past five thousand years. These resources are the by-products of dynamic and thermal processes that have affected the continental lithosphere since its formation in the Archaean. This unit focuses on the understanding the thermal and mechanical aspects of lithospheric deformation. The main headlines of this module include: 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; Thermo-mechanics of sedimentary basins; Thermo-mechanics of orogenesis; Thermal consequences and tectonic feedback of geodynamic processes. Practical classes are designed to enhance com-

3. Undergraduate tables and units of study

putational and communication skills as well as building a profound knowledge in Tectonics. Practicals focus on designing a number of electronic reports on specific topics. These reports will be posted on the Internet to be available to all students. Each report will be the subject of a computer-based oral presentation

GEOS 3004 Geophysics, Imaging, Oil/Ore Production

6 credit points. Prof Iain Mason. **Session:** Semester 2. **Classes:** (12 hrs lecs, pracs)/wk. **Prerequisites:** 16 credit points of Intermediate Science units of study or CIVL2409. **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 3005 Regolith-Sediment Geochemistry

6 credit points. Dr Gavin Birch. **Session:** Semester 1, Semester 2. **Classes:** (12 hrs lecs, pracs)/wk. **Prerequisites:** 16 credit points of Intermediate Science units of study or CIVL2409. **Assessment:** 2 hr theory exams, class work.

NB: Department permission required for enrolment.

This is a problem-based course where we follow contaminants from their primary sources through aquatic pathways and assess their effects on the adjacent receiving basin. Theoretical and conceptual information gained in lectures will be used to trace contaminants in the field and determine major processes controlling chemical behaviour. The course is underpinned by a GIS data analysis of relevant physical attributes of Port Jackson and its sub-catchments, which determine contaminant distributions. Remediation strategies will be considered. The course also examines the widespread development of deeply weathered Regolith terranes in Australia. Weathering processes and Regolith components will be examined in the context of long-term climate variation. Links between bedrock weathering and groundwater salinity will be evaluated along with resource management strategies.

GEOS 3006 Mineral Deposits & Spatial Data Analysis

6 credit points. Dr Derek Wyman. **Session:** Semester 2b. **Classes:** (12 hrs lecs, pracs)/wk, field excursion. **Prerequisites:** 16 credit points of Intermediate Science units of study or CIVL2409. **Assessment:** 2 hr theory exams, class work and field reports.

Mineral deposits will be examined in terms of their spatial distribution and related exploration strategies, their links to igneous rocks and hydrothermal fluids, and the impact of ore-forming processes on mines and 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 and ores including base metals, precious metals, high-tech commodities and gemstones. An integrated approach will relate tectonic processes through to time to the formation of mineral provinces, and the economic and environmental viability of ore extraction and processing. 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. The excursion will include visits to active and historic mining and ore-processing sites in NSW.

GEOS 3007 Remote Sensing: Imaging the Earth

6 credit points. Dr Geoff Clarke. **Session:** Semester 1b. **Classes:** (12 hrs of lecs, pracs)/wk. **Prerequisites:** 16 credit points of Intermediate Science units of study or CIVL2409. **Assessment:** Practical work, a 2-hour computer-based examination and an assignment.

This unit of study provides a comprehensive introduction to the computational manipulation and application of imaging techniques commonly used in the Earth Sciences, from the microscopic to macroscopic level. It includes an introduction to image analysis using mineral textures in common igneous and metamorphic rocks, and how this analysis can be used to understand the processes controlling their textural development. The application and interpretation of remote sensing techniques will also be covered in computer-based practical exercises that use a mixture of Landsat thematic mapper, airborne radiometric and magnetic databases. The application of processed images in mineral exploration and tectonic analysis will be covered through integrated lectures and laboratory exercises.

GEOS 3008 Field Geology and Geophysics

6 credit points. Dr Geoff Clarke, Dr Patrice Rey, A/Prof Dietmar Müller. **Session:** Semester 2a. **Classes:** (weeks 1-7) 14 days of field work. **Prerequisites:** GEOL2002.

Assessment: The field work will be assessed by written reports (up to 30 pages in total) and field exercises.

NB: From 2006 the prerequisites will be: GEOL (2002 or 2123) or CIVL2409

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 3904 Geophysics, Imaging, Oil/Ore Prod (Adv)

6 credit points. Prof Iain Mason. **Session:** Semester 2a. **Classes:** 12 hours per week lectures, practical, computer-based exercises. **Prerequisites:** 24 credit points of Intermediate Science Units, or GEOL2923 or CIVL2409.

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 3906 Mineral Deposits & Spatial Data Advanced

6 credit points. Dr Derek Wyman. **Session:** Semester 2b. **Classes:** 12 hours lec/prac/fieldwork. **Prerequisites:** GEOL (2002 or 2123 or 2923) or CIVL2409. **Assessment:** One 2 hour exam, prac reports, group presentation.

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 GEOS3006 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 3907 Remote Sensing: Imaging the Earth (Adv)

6 credit points. Dr Geoff Clarke. **Session:** Semester 1b. **Classes:** (12 hrs lecs, pracs)/wk. **Assumed Knowledge:** GEOL (2001 or 2202). **Prerequisites:** Distinction average in 16 credit points of Intermediate Science subjects or CIVL2409. **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 3908 Field Geology and Geophysics (Advanced)

6 credit points. Dr Geoff Clarke. **Session:** S2 Intensive. **Classes:** 14 days of fieldwork. **Prerequisites:** GEOL (2002 or 2123 or 2923) or CIVL2409. **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).

Geology Honours

Dr Derek Wyman

Offered: February and July.

Suitably qualified students may take Honours in Geology. They are required to undertake a research project under the direction of a supervisor, submit a thesis embodying the results of the investigation and undertake such coursework as may be prescribed.

Students not eligible to take Honours may be given permission to enrol in the Graduate Diploma in Science.

Further details are available from the Head of School.

Geophysics Honours

Offered: February and July

Suitably qualified students may take Honours in Geophysics. They are required to undertake a research project under the direction of a supervisor, submit a thesis embodying the results of the investigation and undertake such coursework as may be prescribed.

Students not eligible to take Honours may be given permission to enrol in the Graduate Diploma in Science.

Further details are available from the Head of School.

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.

261 History and Philosophy of Science

HPSC 1000 Bioethics

6 credit points. Dr Rachel Ankeny. **Session:** Semester 1. **Classes:** (3 lec, 1 tut)/wk. **Assessment:** Short essays, tutorial work, tests.

NB: This Junior unit of study is highly recommended to Intermediate and Senior Life Sciences students.

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 2100 The Birth of Modern Science

6 credit points. Dr Ofer Gal. **Session:** Semester 1. **Classes:** (3 lec, 1 tut)/wk. **Prerequisites:** 24 credit points of Junior units of study. **Assessment:** Short essays, tutorial work, tests.

An introduction to the 'scientific revolution' of the seventeenth century, 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. Dr Rachel Ankeny and HPS staff. **Session:** Semester 2. **Classes:** (3 lec, 1 tut)/wk. **Prerequisites:** 24 credit points of Junior units of study. **Assessment:** Short essays, tutorial work, tests.

This unit 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.

Textbooks
TBA, course reader

HPSC 2900 The Birth of Modern Science (Advanced)

6 credit points. Dr Ofer Gal. **Session:** Semester 1. **Classes:** (3 lec, 1 tut)/wk. **Prerequisites:** Enrolment in the Talented Student Program or 24 credit points of Junior study with a Distinction average. **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. Dr Rachel Ankeny and HPS staff. **Session:** Semester 2. **Classes:** (3 lec, 1 tut)/wk. **Prerequisites:** Enrolment in the Talented Student Program or 24 credit points of Junior study with a Distinction average. **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
TBA, 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 BLibStud must take 24 credit points from the following Senior units of study. HPSC 3102 is available to Bachelor of Medical Science students only.

HPSC 3002 History of Biological/Medical Sciences

6 credit points. Dr Hans Pols or HPS staff. **Session:** Semester 2. **Classes:** (2 lec, 2 tut)/wk. **AssumedKnowledge:** HPSC (2001 and 2002) or HPSC (2100 and 2101). **Prerequisites:** HPSC (2001 and 2002) or (Credit or better in HPSC (2001 or 2002) and at least 24 credit points of Intermediate or Senior units of study). **Assessment:** Short essays, presentation, tutorial work, final essay.

NB: From 2006 the prerequisites will be: 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.

Examines some of the major episodes in the social and scientific history of the biological and biomedical sciences.

Textbooks
Course reader

HPSC 3015 History and Philosophy of Physics

6 credit points. Dr David Miller. **Session:** Semester 1. **Classes:** 2 lec & 2 tut/wk and individual student consultation as required. **AssumedKnowledge:** HPSC (2100 and 2101) or HPSC (2001 and 2002). **Prerequisites:** HPSC (2001 and 2002) or (Credit or better in HPSC (2001 or 2002) and at least 24 credit points of Intermediate or Senior units of study). **Assessment:** Short essays, tutorial work, tests.

NB: From 2006 the prerequisites will be: 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

This unit explores the historical and philosophical development of modern physics, from its 19th-century beginnings to the head-boggling philosophical problems of relativity, quantum mechanics and cosmology. Particular attention is paid to times when physicists have had to make philosophical choices in order to decide between competing ways of describing the world.

Textbooks
Course reader

HPSC 3016 Mathematical Sciences: HPS

6 credit points. Dr Ofer Gal. **Session:** Semester 2. **Classes:** 2 lec & 2 tut/wk. Individual student consultation as required. **AssumedKnowledge:** HPSC (2100 and 2101) or HPSC (2001 and 2002). **Prerequisites:** HPSC (2001 and 2002) or (Credit or better in HPSC (2001 or 2002) and at least 24 credit points of Intermediate or Senior units of study). **Assessment:** Take-home tests, short essays, tutorial participation.

NB: From 2006 the prerequisites will be: 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

This unit explores the historical and philosophical development of mathematics, with particular emphasis on Galileo and the 17th-century mathematical revolution in physics. In addition to seeing how mathematics has developed, we will look at the changing philosophical and social context of that development.

Textbooks
Course reader

HPSC 3021 Philosophy and Sociology of Biology

6 credit points. Dr Rachel Ankeny or HPS staff. **Session:** Semester 2. **Classes:** (2 lec, 2 tut)/wk. **AssumedKnowledge:** HPSC (2100 and 2101) or HPSC (2001 and 2002). **Prerequisites:** HPSC (2001 and 2002) or (Credit or better in HPSC (2001 or 2002) and at least 24 credit points of Intermediate or Senior units of study). **Assessment:** Essays, take home tests, tutorial assessment.

NB: From 2006 the prerequisites will be: 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

An examination of scientists' varied concepts of the gene over the last hundred years, the extent to which those concepts were motivated by ideas external to biology, and the consequences of those concepts, both directly within biology and in the broader scheme of things, including the interactions between theories of inheritance and the social uses to which scientific knowledge is put. No previous study of biology is assumed.

Textbooks
Course reader, and Richard Lewontin (1993), "The Doctrine of DNA", London: Penguin. Also published under the title "Biology as Ideology".

HPSC 3022 Science and Society

6 credit points. Dr Hans Pols or HPS staff. **Session:** Semester 1. **Classes:** (2 lec, 2 tut)/wk. **AssumedKnowledge:** HPSC (2100 and 2101) or HPSC (2001 and 2002). **Prerequisites:** (HPSC2001 and HPSC2002) or (a Credit or better in either HPSC2001 or HPSC2002 and at least 24 credit points of Intermediate or Senior units of study). **Assessment:** Short essays, tutorial work, presentation.

NB: This unit is a requirement for HPS majors. From 2006 the prerequisites will be: 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

3. Undergraduate tables and units of study

The sociology of science analyses the place and function of science in society, the relations between science and society, and how scientific communities are formed, maintained, transformed, and disappear. This course provides an overview to the basic approaches within the sociology of science and how these approaches inform and guide current research in history and philosophy of science.

Textbooks
Course reader

HPSC 3023 History of the Human Sciences

6 credit points. Dr Hans Pols. **Session:** Semester 1. **Classes:** (2 lec, 2 tut)/wk. **AssumedKnowledge:** HPSC (2001 and 2002) or HPSC (2100 and 2101). **Prerequisites:** (HPSC2001 and HPSC2002) or (a Credit or better in either HPSC2001 or HPSC2002 and at least 24 credit points of Intermediate or Senior units of study). **Assessment:** Take-home essays (4000 words), take-home tests, tutorial work.

NB: From 2006 the prerequisites will be: 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

Examines the origins and the development of the human sciences, such as anthropology, psychology, sociology, and psychiatry. Topics covered in this course are: the function of the human sciences in their social and political contexts, the development of investigative practices, the development of research methodologies, and the influence of the human sciences on everyday life.

Textbooks
Course reader

HPSC 3024 Science and Ethics

6 credit points. Dr Michael Selgelid. **Session:** Semester 1. **Classes:** (2 lec, 2 tut)/wk. **Prerequisites:** At least 24 credit points of Intermediate or Senior units of study. **Assessment:** Short essays, tutorial work, tests.

Focuses on the ethical issues arising in science. Students have the chance to compare the theories studied to the experience of working scientists.

Textbooks
Course reader

HPSC 3102 History of the Biomedical Sciences

12 credit points. Dr Hans Pols & HPS staff. **Session:** Semester 1, Semester 2. **Classes:** 4 lec & 4 tut/wk. **Prerequisites:** HPSC (2001 and 2002). **Assessment:** Short essays, tutorial work, take-home tests.

NB: Available to Bachelor of Medical Science students only. From 2006 the prerequisites will be: 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

An introduction to some of the major episodes in the social and scientific history of biological and medical science.

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 BLibStud with a major in HPS or another relevant area and to students who have satisfied the requirements for the degree of BMedSci 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).

HPSC 4101 Philosophy of Science

6 credit points. Jason Grossman. **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:** Five short written assignments, seminar participation.

NB: Department permission required for enrolment.

This unit explores the relationships between scientific theories and evidence, and the relationships between scientific theories and other scientific theories. Philosophical analyses are compared with examples of actual practice in physical and biological sciences.

Textbooks
Blackburn S., The Oxford Dictionary of Philosophy, and course reader.

HPSC 4102 History of Science

6 credit points. 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.

This unit explores major episodes in the history of science as well as introducing students to historiographic methods.

Textbooks
Course reader

HPSC 4103 Sociology of Science

6 credit points. Dr Hans Pols. **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:** Essays, fieldwork report, seminar participation mark.

NB: Department permission required for enrolment.

This course builds upon earlier courses introducing the sociology of science with an exploration of recent approaches in the social studies of scientific knowledge. Specific topics include the 'strong program', sociologists of knowledge and their critique of traditional philosophy of science, the counter-arguments of philosophers, anthropological approaches to science such as ethnomethodology and 'actor-network' theory, and sociology of technology. Students evaluate the approaches by conducting their own research on specific cases.

Textbooks
Course reader

HPSC 4104 Recent Topics in HPS

6 credit points. 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.

An examination of one area of the contemporary literature in the history and philosophy of science.

Textbooks
Course reader

HPSC 4105 HPS Research Methods

6 credit points. Dr Rachel Ankeny. **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:** Literature review, archival research project, seminar participation mark, short essays.

NB: Department permission required for enrolment.

An introduction to the research skills of history, philosophy and sociology of science. Students will learn to be conscious of their own introductions of interpretations, arguments and theories into their research and writing through comparative study of different schools in contemporary HPS.

Textbooks
Course reader

HPSC 4108 Core topics: History & Philosophy of Sci

6 credit points. HPS staff. **Session:** Winter, 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. **Assessment:** Essays, seminar presentations, seminar participation mark.

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. HPS Staff. **Session:** Semester 1, Semester 2. **Classes:** Weekly individual supervision, fortnightly 90-minute research seminars. **AssumedKnowledge:** 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). **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. HPS Staff. **Session:** Semester 1, Semester 2. **Classes:** Weekly individual supervision, fortnightly 90-minute research seminars. **AssumedKnowledge:** 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). **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. HPS Staff. **Session:** Semester 1, Semester 2. **Classes:** Weekly individual supervision, fortnightly 90-minute research seminars. **AssumedKnowledge:** 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). **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. HPS Staff. **Session:** Semester 1, Semester 2. **Classes:** Weekly individual supervision, fortnightly 90-minute research seminars. **AssumedKnowledge:** 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). **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. **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

Dr Helen Briscoe

The Immunology Unit of the Department of Medicine administers the Immunobiology Major. The Immunology Unit is located in the Centenary Institute, Building 93, Royal Prince Alfred Hospital and Room 424 Blackburn Building DO6. Further information from Dr Helen Briscoe (phone (02) 9351 7308; email hbriscoe@med.usyd.edu.au) and <http://www.med.usyd.edu.au/medicine/immunology/>.

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 or Physiology. Participants in the Immunobiology major will select an accompanying senior unit according to their particular interest. Concurrent study in these 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

The Immunology Unit of the Department of Medicine offers Introductory Immunology (IMMU 2101) at Intermediate level, Immunology (IMMU 3002) at Senior level and Immunology Honours. The Immunology Unit is located in the Centenary Institute, Building 93, Royal Prince Alfred Hospital and Room 424 Blackburn Building DO6. Further information can be obtained from Dr Helen Briscoe (phone (02) 9351 7308; email hbriscoe@med.usyd.edu.au) and <http://www.med.usyd.edu.au/medicine/immunology/>.

IMMU 2101 Introductory Immunology

6 credit points. Dr Helen Briscoe. **Session:** Semester 1. **Classes:** 2x 1hr lectures/week, 3 hr tutorial or practical or independent study/week. **AssumedKnowledge:** Junior Biology and Junior Chemistry. **Prerequisites:** 24 credit points of Junior units of study from any of the Science discipline areas. **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 IMMU3002. The completion of 6 credit points of MBLG 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 (~15 lectures). 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 fundament-

al 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 3002 Immunology

12 credit points. Dr Allison Abendroth. **Session:** Semester 2. **Classes:** 3 lec, one 4 hr prac & one 2 hr tut/wk. **AssumedKnowledge:** Intermediate Biochemistry and Molecular Biology and Genetics. **Prerequisites:** IMMU2001 or IMMU2101 and 6 credit points of Intermediate units of study from Biochemistry or Biology or Microbiology or Molecular Biology and Genetics or Pharmacology or Physiology. **Assessment:** Two 2 hr theory exams (60%), essay, practical quizzes and reports and seminar (40%).

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

This unit of study will provide a comprehensive understanding of the components and functions of the immune system at the molecular and cellular levels; the mechanisms of pathological immune processes; immune system dysfunction; and, immunological techniques used in the life sciences in clinical diagnostic and research laboratories. The components of this study unit will be taught by immunologists in the Department of Medicine, with contributions from the Centenary Institute for Cancer Medicine & Cell Biology and other invited experts in the discipline.

Textbooks

Cellular and Molecular Immunology 5th edition.

AK Abbas & AH Lichtman. Saunders 2003

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 IMMU 3002 or BMED 3003, will have taken Senior study in Biochemistry, Biology, Cell pathology, Microbiology or Physiology, and, for BSc candidates, gained a major in Immunobiology, Biochemistry, Biology, Cell Pathology or Physiology. Usually Honours candidates will have an overall SCIAM of 65+.

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 ISYS) 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

3. Undergraduate tables and units of study

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 16 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. **Session:** Summer, Semester 1, Semester 2. **Classes:** One 1hr lecture, one 2 hr tutorial, one 3hr practical. **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. **Session:** Semester 1, Semester 2. **Classes:** 1 lec, 2 tut & 3 lab/wk. **Assumed Knowledge:** HSC Mathematics Extension 1. **Prerequisites:** UAI at least that for acceptance into BSc(Adv) degree program. **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. **Session:** Summer, Semester 1, Semester 2. **Classes:** One 1hr lecture, one 2hr tutorial, one 3 hr practical. **Prerequisites:** SOFT (1001 or 1901) or COMP (1001 or 1901). **Assessment:** Written and practical assignments, quizzes, exam.

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. **Session:** Semester 2, Semester 1. **Classes:** 1 lec, 2 tut & 3 lab/wk. **Prerequisites:** SOFT (1001 or 1901) or COMP (1001 or 1901) and Distinction in one of these. **Assessment:** Written and practical assignments, quizzes, exam.

NB: Department permission required for enrolment.

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. **Session:** Semester 1, Semester 2. **Classes:** (2 lec, 1 tut, 3 prac)/wk. **Assumed Knowledge:** Basic computer operations. **Assessment:** Assignments, written exam, prac exam.

We are currently living in the age of information, a knowledge based economy driven by computers, databases, information systems, and networks. Whether it is at work, play or school, you need to have basic computer competencies to be productive in this new economy. INFO1001 is an introductory course which aims to prepare the next generation of students to develop the necessary knowledge, skills and abilities to be competent with information technology. Productivity tools and web technologies such as spreadsheets, databases, search engines, HTML, and JavaScript, will be taught using a problem solving context relevant for any academic discipline. Students will undertake practical and meaningful tasks including authoring an interactive e-Commerce web site using HTML and JavaScript and building a small scale application for managing information, decision making and reporting. In addition, the course will address the importance of understanding the many social, ethical, and intellectual property issues arising from the widespread use of information technology in our society.

ISYS 1003 Foundations of Information Technology

6 credit points. **Session:** Summer. **Classes:** Two 1hr lectures, one 3hr practical & one 1hr tutorial. **Assessment:** Practical assignments, quizzes, tutorial contribution, written 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 property issues that arise when creating and handling information.

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. There will be major changes to the curriculum in 2005. These will result in a large number of changes to the units listed below explained in full on the School of Information Technologies website at <http://www.it.usyd.edu.au/>. Students should consult this website to assist them in selecting their units.

COMP 2160 Data Structures

6 credit points. **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). **Corequisites:** MATH (1004 or 1904 or 2009 or 2011 or 2069 or 2969). **Assessment:** Assignments 30 %, one 2 hour exam.

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 structures 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. **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. **Corequisites:** MATH (1004 or 1904 or 2009 or 2011 or 2069 or 2969). **Assessment:** Assignments 30 %, 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 2000 Systems Analysis and Design

4 credit points. **Session:** Summer. **Classes:** Two 1hr lectures, one 1 hr tutorial, or one 1hr practical; 1 unscheduled lab work with a CASE tool. **Prerequisites:** ISYS 1003 or INFO 1000 or INFS 1000 or 6 credit points of Computational Science or SOFT (1001 or 1901) or COMP (1001 or 1901). **Assessment:** Written and practical assignments + written exam.

The syllabus covers data-centred, process-oriented and object-centred methodologies for requirements analysis and system description to address organisational needs, including the gathering of facts, diagnosis of problems, recommendation of appropriate and feasible solutions. A CASE tool will be used to develop practical skills.

INFO 2110 Systems Analysis and Modelling

6 credit points. Mr Simon Poon and Dr Geoffrey Kennedy. **Session:** Semester 1. **Classes:** 2 hrs lec, 1 hr tut & 1 hr prac/wk. **AssumedKnowledge:** Simple data modelling and simple SQL knowledge covered at ISYS1003 or INFO1000 level. **Prerequisites:** ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC. **Assessment:** One 2hr exam, two assignments, two tut papers.

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 2120 Database Systems 1

6 credit points. Dr Uwe Roehm, A/Prof Joseph Davis. **Session:** Semester 2. **Classes:** 2 hrs lec, 2 hr block lab. **AssumedKnowledge:** Basics of data modeling, experience working with information technology tools. **Prerequisites:** ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC. **Assessment:** One 2 hour exam, written and/or practical assignments.

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 2810 Systems Analysis and Modelling (Adv)

6 credit points. Mr Simon Poon and Dr Geoffrey Kennedy. **Session:** Semester 1. **Classes:** 3 lec, 1tut and/or 1prac/wk. **AssumedKnowledge:** Simple data modelling and simple SQL knowledge covered at ISYS1003 level. **Prerequisites:** ISYS1003 or INFS1000 or INFO1000 or INFO1003 or SOFT (1001 or 1901) or COMP (1001 or 1901) or 6 crpts of COSC; and Distinction in one of these or in a 2000-level or above INFO, ISYS or SOFT unit. **Assessment:** One 3hr exam, two assignments, two tut papers.

An advanced alternative to INFO2110; covers material at an advanced and challenging level. See the description of INFO2110 for more information.

INFO 2820 Database Systems 1 (Advanced)

6 credit points. Dr Uwe Roehm, A/Prof Joseph Davis. **Session:** Semester 2. **Classes:** 3 hrs lec, 1 hr lab. **AssumedKnowledge:** Basics of data modelling, experience working with information technology tools. **Prerequisites:** ISYS1003 or INFS1000 or SOFT (1001 or 1901) or COMP (1001 or 1901) or INFO1000 or INFO1003 or 6 credit points of COSC; Distinction in one of these or in a 2000-level or above unit in INFO, ISYS or SOFT. **Assessment:** One 2 hour 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. A/Prof Joseph Davis. **Session:** Semester 1. **Classes:** 2 hours of lecture and 2 hours of tutorial per week. **AssumedKnowledge:** 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:** ISYS1003 or INFO1000 or INFO1003 or INFS1000. **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. **Session:** Semester 1. **Classes:** 2 hrs lec and 2 hrs prac/wk. **Prerequisites:** ELEC1601 or SOFT (1001 or 1901). **Assessment:** One 2hr exam, one mid-semester test and two assignments (one involves programming).

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 Stallings,

ISBN: 0131006819, Publisher: Pearson-Prentice Hall

NETS 2850 Fundamentals of Networking (Advanced)

6 credit points. **Session:** Semester 1. **Classes:** 3hrs lec and 1hr prac/wk. **Prerequisites:** ELEC1601 or SOFT (1001 or 1901) in 2005, and Distinction in one NETS or SOFT unit. **Assessment:** One 2hr exam, one mid-semester test, and two assignments (one involves programming).

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 2004 Software Development Methods 1

4 credit points. **Session:** Summer, Semester 1. **Classes:** Two 1hr lectures, one 2hr practical. **Prerequisites:** SOFT (1002 or 1902) or COMP (1002 or 1902). **Assessment:** Written assignments, exam.

NB: Department permission required for enrolment.

In this unit of study we cover elementary methods for developing robust, efficient, and re-usable software. Specific topics include memory management and the pragmatic aspects of implementing data structures such as lists and hash tables. Debugging tools and techniques are discussed and common programming errors are considered along with defensive programming techniques to avoid such errors. Testing regimes, such as regression testing, are introduced. 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.

SOFT 2130 Software Construction 1

6 credit points. A/Prof Kummerfeld, A/Prof Kay. **Session:** Semester 2. **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). **Assessment:** Programming assignments, in-lab quizzes, 2 hr written exam.

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

3. Undergraduate tables and units of study

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. 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. **Assessment:** Programming assignments, in-lab quizzes, 2 hr written exam.

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. There will be major changes to the curriculum in 2005. These will result in a large number of changes to the units listed below explained in full on the School of Information Technologies website at <http://www.it.usyd.edu.au/>. Students should consult this website to assist them in selecting their units.

COMP 3002 Artificial Intelligence

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1hr tutorial. **Prerequisites:** [SOFT (2004 or 2904) or COMP (2004 or 2904)] and COMP (2003 or 2903) and 8 credit points 2000-level MATH and/or STAT and/or ECMT. **Assessment:** Assessment assignments, written exam.

Artificial Intelligence 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. Most of these activities depend on general or 'weak' methods, primarily search. AI also addresses issues related to the representation and use of the knowledge of human experts. This unit of study will explore topics from selected areas of AI. 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 of study will involve a practical component in which some simple problems are solved using standard AI techniques.

COMP 3902 Artificial Intelligence (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1hr tutorial. **Prerequisites:** [SOFT (2004 or 2904) or COMP (2004 or 2904)] and COMP (2003 or 2903) and 8 credit points 2000-level MATH and/or STAT and/or ECMT and Distinction in a COMP, SOFT or MATH unit at 2000-level or above. **Assessment:** Written and programming assignments; written exam.

An advanced alternative to COMP 3002; covers material at an advanced and challenging level.

COMP 3111 Algorithms 2

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1hr tutorial. **Assumed Knowledge:** MATH 2009. **Prerequisites:** COMP (2111 or 2811 or 2002 or 2902) and MATH (1004 or 1904 or 2009 or 2011) and MATH (1005 or 1905). **Assessment:** Written and practical assignments plus written exam.

This unit continues the investigation of algorithmics begun in COMP 2111 Algorithms 1. Further strategies for solving search and optimisation problems in graphs will be presented, including network flow methods.

The unit will also provide a survey of algorithmic approaches for which traditional analyses are not appropriate. These will include randomisation, online algorithms and competitive analysis, and parallel and distributed algorithms. Problems drawn from such areas as networks, systems and databases will be used to illustrate these algorithmic approaches; for these, the student will design and analyse their corrective and efficiency. An introduction to intractable problems, NP-hardness, and heuristics will also be given.

COMP 3811 Algorithms 2 (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1hr tutorial/lab. **Prerequisites:** COMP (2002 or 2902 or 2111 or 2811) and MATH (1004 or 1904 or 2009 or 2011) and MATH (1005 or 1905). Also Distinction in a COMP, SOFT or MATH intermediate unit. **Assessment:** Written assignments, written exam.

An advanced alternative to COMP 3111; covers material at an advanced and challenging level.

COMP 3310 Theory of Computation

6 credit points. Prof. Peter Eades. **Session:** Semester 2. **Classes:** 2 hrs lecture per week, 2 hrs tut (structured as 2 hr block) per week. **Prerequisites:** COMP (2160 or 2860 or 2111 or 2811 or 2002 or 2902). **Assessment:** 30 % 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. 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. **Assessment:** 30 % 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 3005 Organisational Database Systems

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1hr tutorial. **Prerequisites:** INFO (2000 or 2900) and INFO (2005 or 2905). **Assessment:** Assessment assignments, written exam.

Large organisations store lots of essential data in central repositories from which many users can access it. This unit covers the development of client-server systems which access shared data in a DBMS. It also deals with the responsibilities of the Database Administrator who must organise the physical structures to make access efficient, and who must also guard the integrity of the data.

INFO 3905 Organisational Database Systems (Adv)

4 credit points. -. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** INFO (2000 or 2900) and INFO (2005 or 2905) and Distinction in an INFO, ISYS or SOFT unit at 2000-level or above. **Assessment:** Written and programming assignments; written exam.

An advanced alternative to INFO 3005; covers material at an advanced and challenging level.

ISYS 3000 Information Systems Management

4 credit points. **Session:** Semester 2. **Classes:** Two 1hr lectures, one 1hr tutorial; 1 unscheduled lab work. **Prerequisites:** INFO2007 or ISYS2007 or ISYS2140. **Assessment:** Written and practical assignments and written exam.

The syllabus covers applications in business and management, managing information technology, planning and implementation of information systems, end user computing, system approach, strategic planning, operations management, control and audit and quality management, strategic information systems.

ISYS 3012 Project Management and Practice

4 credit points. **Session:** Semester 1. **Classes:** One 2hr lecture, one 1hr practical, 1hr independent study. **Prerequisites:** INFO (2000 or 2900). **Assessment:** One 2hr examination, written assignments.

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 with a focus on management of development for enterprise-level systems. Major topics include managing the system life cycle, system and database integration issues, network and client-server management, system performance evaluation, managing expectations of team members, cost-effectiveness analysis, and change management.

ISYS 3015 Analytical Methods for IS Professionals

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1hr tutorial. **Prerequisites:** [ARIN 1000 or ENGL (1050 or 1005 or 1000) or LNGS (1001 or 1002 or 1005) or ECOF (1001 or 1002)] and 16 credit points of intermediate or senior units of study, including ISYS 2006 and (ISYS 2007 or INFO 2007) and INFO (2000 or 2900). **Assessment:** Written assignments and exam.

NB: Enrolment Restriction: Entry is restricted to students who have a credit or better in at least one of the Prerequisite units.

A collection of different methods for collecting and analysing information will be studied in the context of a systems thinking approach to investigative research. These approaches include participative methods, surveys, focus groups, controlled experiments and case studies.

ISYS 3113 Arts Informatics Systems

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1hr tutorial. **Prerequisites:** INFO (2000 or 2900) and INFO (2005 or 2905) and [(ARIN 1000 or ENGL (1050 or 1005 or 1000) or LNGS (1001 or 1002 or 1005) or ECOF (1001 or 1002)]. **Assessment:** Examination and written assignments.

A variety of topics relevant to the text and image processing needs of the Arts and Social Sciences such as scripting languages, text retrieval, natural language processing, applied artificial intelligence, and multi media techniques in the context of data distributed in databases across networks.

ISYS 3207 Information Systems Project

8 credit points. **Session:** Semester 2. **Classes:** One 1hr lecture. **Prerequisites:** ISYS 3012 and (ISYS 3015 or ARIN 2000). **Assessment:** Written project report and presentation.

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.

MULT 3004 Computer Graphics

4 credit points. **Session:** Semester 2. **Classes:** Two 1hr lectures, one 1-2 hour tutorial/practical. **Prerequisites:** COMP (2111 or 2811 or 2002 or 2902 or 2160 or 2860) and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and MATH (1002 or 1902). **Assessment:** Written and practical assignments plus 2hr written exam.

A picture has a million pixels (in round terms). Like any other interface, it must be well engineered for accuracy, high-speed performance and compatibility with user needs. This unit of study examines established algorithms for picture generation, covering such topics as hidden-line elimination, shading and texturing and ray-tracing. The effects on performance of algorithmic design choices are considered. This unit assumes an understanding of vector and matrix operations.

MULT 3904 Computer Graphics (Advanced)

4 credit points. **Session:** Semester 2. **Classes:** Two 1hr lecture, one 1-2 hour tutorial/practical. **Prerequisites:** COMP (2111 or 2811 or 2002 or 2902 or 2160 or 2860) and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and MATH (1002 or 1902) and Distinction in a COMP or MULT or SOFT unit at 2000-level or above. **Assessment:** Written and practical assignments plus 2hr written exam.

An advanced alternative to MULT3004; covers material at an advanced and challenging level.

MULT 3018 Multimedia Interaction

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1-2 hour tutorial/practical. **Prerequisites:** SOFT (2004 or 2904) or COMP (2004 or 2904). **Assessment:** Assignments and written exam.

More than 70% of the information people receive comes from visual perception. Multimedia allows a more comprehensive interaction between humans and computers by exploiting the natural ability that humans have making sense of visual information. This unit provides an overview of visual communication and multimedia interaction with computer interfaces. It introduces the visual perception fundamentals, discusses multimedia I/O devices and multimedia interaction, illustrates visualisation of relational information, describes interactive visual communication and presents some visualisation applications, such as medical imaging and flight simulation.

MULT 3918 Multimedia Interaction (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** Two 1 hr lectures, one 1-2 hour tutorial/practical. **Prerequisites:** SOFT (2004 or 2904) or COMP (2004 or 2904) and Distinction in a COMP or MULT or SOFT unit at 2000-level or above. **Assessment:** Written assignments and exam.

An advanced alternative to MULT 3018; covers material at an advanced and challenging level.

MULT 3019 Digital Media

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1-2 hour tutorial/practical. **Prerequisites:** COMP (2111 or 2811 or 2002 or 2902) and MATH (1001 or 1901) and MATH (1002 or 1902) and MATH (1003 or 1903). **Assessment:** Written and practical assignments plus written exam.

Multimedia has become more and more important in modern computing. This unit provides an overview of processing digital media, which includes text, audio, pictorial data and video. It introduces the main processing techniques such as text parsing and summarisation, audio masking and manipulation, video segmentation and tracking; standards in each of these areas, such as UML, MP3, JPEG and MPEG; and presents applications such as multimedia Web design, multimedia presentation, video cataloguing and retrievals.

MULT 3919 Digital Media (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lecture, one 1-2 hour tutorial/practical. **Prerequisites:** COMP (2111 or 2811 or 2002 or 2902) and MATH (1001 or 1901) and MATH (1002 or 1902) and MATH (1003 or 1903) and Distinction in a

MULT or SOFT unit at 2000-level or above. **Assessment:** Written and practical assignments plus written exam.

An advanced alternative to MULT 3019; covers material at an advanced and challenging level.

NETS 3007 Network Protocols

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **Prerequisites:** [(NETS (2008 or 2908) and NETS (2009 or 2909)) or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901). **Assessment:** Written assignments and exam.

This unit covers the internal details of network protocols. Building on NETS 2009 which introduces the concepts from a user-viewpoint, discussing the functionality of each protocol, NETS3007 shows how software can provide that functionality.

Topics include the general issues in communications protocols (naming, error detection, buffering, end-to-end argument), and the main design choices taken in TCP/IP. By the end of the unit, student should be able to design implement and debug simple network protocols.

NETS 3907 Network Protocols (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **Prerequisites:** [(NETS (2008 or 2908) and NETS (2009 or 2909)) or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and Distinction in a NETS or SOFT unit at 2000-level or above. **Assessment:** Written assignments and exam.

An advanced alternative to NETS 3007; covers material at an advanced and challenging level.

NETS 3009 Operating Systems

4 credit points. **Session:** Semester 2. **Classes:** Two 1hr lecture, one 1-2 hr tutorial/practical. **Prerequisites:** [NETS (2008 or 2908) or ELEC (1601 or 2601)] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT(2001 or 2901). **Assessment:** Written assignments and exam.

This unit covers the internal details of operating systems. Building on NETS 2008 which introduces the concepts from a user-viewpoint, discussing the functionality of each aspect of an OS, NETS 3009 shows how software can provide that functionality. The topics include the internal structure of OS; several ways each major aspect (process scheduling, interprocess communication, memory management, device management, file systems) can be implemented; the performance impact of design choices.

NETS 3909 Operating Systems (Advanced)

4 credit points. **Session:** Semester 2. **Classes:** Two 1hr lecture, one 1-2 hr tutorial/practical. **Prerequisites:** [NETS (2008 or 2908) or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT(2001 or 2901) and Distinction in a NETS or SOFT unit at 2000-level or above. **Assessment:** Written assignments and exam.

An advanced alternative to NETS3009; covers material at an advanced and challenging level.

NETS 3016 Computer and Network Security

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **AssumedKnowledge:** MATH (1004 and 1005). **Prerequisites:** [(NETS (2008 or 2908) and NETS (2009 or 2909)) or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)]. **Assessment:** Written assignments and exam.

This unit examines the main issues of security for enterprise systems and networks. It covers confidentiality, integrity, data-origin authentication, nonrepudiation, 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 cryptography see MATH 3024.

NETS 3916 Computer and Network Security (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **AssumedKnowledge:** MATH (1004 and 1005). **Prerequisites:** [(NETS (2008 or 2908) and NETS (2009 or 2909)) or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and Distinction in a NETS or SOFT unit at 2000-level or above. **Assessment:** Written assignments and exam.

An advanced alternative to NETS 3016; covers material at an advanced and challenging level.

NETS 3017 Network Programming and Distributed Apps

4 credit points. **Session:** Semester 2. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **Prerequisites:** [(NETS (2008 or 2908) and NETS (2009 or 2909)) or NETS (2150 or 2850) or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901). **Assessment:** Written assignments and exam.

This is a practically-oriented subject in which students learn to write code that uses communication primitives such as sockets, RPC and Java RMI. In contrast, SOFT 3105 assumes the existence of middle-

3. Undergraduate tables and units of study

ware that hides most of the details of creating sockets, sending and receiving data etc.

NETS 3917 Network Prog & Distributed Apps (Adv)

4 credit points. **Session:** Semester 2. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **Prerequisites:** [(NETS (2008 or 2908) and NETS (2009 or 2909)) or NETS2150 or NETS2850 or ELEC 2601] and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and Distinction in a NETS or SOFT unit at 2000-level or above. **Assessment:** Written assignments and exam.

An advanced alternative to NETS 3017; covers material at an advanced and challenging level.

SOFT 3101 Object-Oriented Software Design

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **Prerequisites:** SOFT (2001 or 2901) and INFO (2000 or 2900) and INFO (2005 or 2905) and [SOFT (2004 or 2904) or COMP (2004 or 2904)]. **Assessment:** Written assignments and exam.

An important benefit of the object-oriented approach to software development is that the modelling style (classes with attributes and methods, related by inheritance) is useful throughout the lifecycle. One can represent the problem space as classes, and then adapt these to give a design which is suitable for coding. In this unit, we study a methodical approach to developing a design for a substantial software project. In particular, many "patterns" will be introduced. These describe common ways to solve recurring issues, especially ways that use inheritance to reduce the coupling between parts of the system. We will also cover the precise principles behind design-by-contract, especially the relationship between assertions and inheritance. We will use UML as a notation for expressing designs, and study some ways to structure large designs for improved understanding.

SOFT 3801 Object-Oriented Software Design (Adv)

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **Prerequisites:** SOFT (2001 or 2901) and INFO (2000 or 2900) and INFO (2005 or 2905) and [SOFT (2004 or 2904) or COMP (2004 or 2904)] and Distinction in a SOFT or INFO unit at 2000-level or above. **Assessment:** Written assignments and exam.

An advanced alternative to SOFT 3101; covers material at an advanced and challenging level.

SOFT 3102 User Interface Design and Programming

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **Prerequisites:** [SOFT (2004 or 2904) or COMP (2004 or 2904)]. **Assessment:** Written assignments and exam.

This unit of study introduces several of the critical elements programmers need to create effective user interfaces. These include the essential technical skills used in creating several of the major types of interface as well as human and design issues. Critical to designing an effective interface is familiarity with the substantial body of knowledge about cognitive and perceptual constraints. The technical tools of User Interface programming include learning current tools for building interfaces. The unit of study will introduce students to 'web-technology' (programming of interfaces in the World-Wide-Web environment), a visual programming environment, and GUI building tools based on scripting.

SOFT 3802 User Interface Design Programming (Adv)

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **Prerequisites:** [SOFT (2004 or 2904) or COMP (2004 or 2904)] and Distinction in a SOFT or INFO unit at 2000-level or above. **Assessment:** Written assignments and exam.

An advanced alternative to SOFT 3102; covers material at an advanced and challenging level.

SOFT 3103 Software Validation and Verification

4 credit points. **Session:** Semester 2. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **Prerequisites:** [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and MATH (1005 or 1905). **Assessment:** Written assignments and exam.

This unit will introduce a thorough approach to ensure the quality of software. It will focus on how to design and carry out effective testing. Testing needs to address both functionality and also non-functional issues such as performance, usability, conformance to policy. We will learn to evaluate test strategies in terms of coverage and contribution to system reliability. Attention is also paid to the automation and management of the testing process.

SOFT 3803 Software Validation & Verification (Adv)

4 credit points. **Session:** Semester 2. **Classes:** Two 1hr lectures, one 1-2 hour tutorial/practical. **Prerequisites:** [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and MATH (1005 or 1905) and Distinction in a SOFT or INFO unit at 2000-level or above. **Assessment:** Written assignments and exam.

An advanced alternative to SOFT 3103; covers material at an advanced and challenging level.

SOFT 3104 Software Development Methods 2

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **Prerequisites:** [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901). **Assessment:** Written assignments and 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. In addition, you will have had experience with refactoring, use of software configuration management systems (such as CVS, RCS, SCCS, Perforce), and use of metrics in Personal Software Process.

SOFT 3804 Software Development Methods 2 (Adv)

4 credit points. **Session:** Semester 1. **Classes:** Two 1hr lectures, one 1-2 hr tutorial/practical. **Prerequisites:** [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and Distinction in a SOFT or INFO unit at 2000-level or above. **Assessment:** Written assignments and exam.

An advanced version of SOFT 3104; covers material at an advanced and challenging level.

SOFT 3200 Software Development Project

8 credit points. **Session:** Semester 1, Semester 2. **Prerequisites:** [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and 8 credit points from BIT table III(ii) and 8 credit points from BIT table III(iv). **Assessment:** Written report and presentation.

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 3700 Software Development Project (Advanced)

8 credit points. **Session:** Semester 1, Semester 2. **Prerequisites:** [SOFT (2004 or 2904) or COMP (2004 or 2904)] and SOFT (2001 or 2901) and 8 credit points from BIT table III(ii) and 8 credit points from BIT table III(iv) and Distinction in a 2000- or 3000-level unit from COMP, INFO, MULT, NETS, or SOFT. **Assessment:** Written report and presentation.

This unit is an Advanced alternative to SOFT 3200. Students develop software to assist an organisation or research group which is involved in innovation. Involvement in the activities of the client community is an important aspect of the unit.

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 which have codes starting with COMP, INFO, MULT, NETS and/or SOFT).

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.

Information Systems Honours

Information Systems Honours consists of coursework and a project. The project involves a substantial development or investigation task generally in support of the department's research effort. It provides training in investigating the history of the body of knowledge that encompasses a conceptual problem space, defining a complex task to tackle the problem, and then taking the task to completion. Students receive an education in moving through a problem from its inception to its completion so that they gain the confidence and experience to tackle independently significant research and industrial projects. Research areas in the School include natural language processing, data mining, systems methodologies and Workflow methods. Students are required to participate in School seminars as part of their coursework and in all other activities of the School. They are provided with office accommodation and laboratory facilities and may be employed for a few hours per week in undergraduate teaching.

For further details consult the School Handbook and the Honours Guide Book.

Law units of study

LAWS 1002 Contracts

8 credit points. Dr Luke Nottage (Convenor). **Session:** Summer, Semester 1, Semester 2. **Classes:** Two 2 hr seminars per week. **Prerequisites:** Foundations of Law.

February Semester classes are for students in Combined Law and July Semester classes are for students in Graduate Law. 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 1003 Criminal Law

8 credit points. Dr Gail Mason (Convenor - Semester 1 - Graduate Law); Professor Mark Findlay (Convenor - Semester 2 - Combined Law). **Session:** Semester 1, Semester 2. **Classes:** Two 2 hr seminars per week.

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 accommodate 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 wide range of socio-legal literature, and will focus on particular substantive 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.

(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 knowledge of how the criminal law operates in its broader societal context.

The understandings referred to in the foregoing paragraphs will have a critical focus and will draw on procedural, substantive, theoretical and empirical sources. Race, gender, class and the interaction of these factors will be key themes.

LAWS 1006 Foundations of Law

6 credit points. Ms Jenni Millbank (Convenor). **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 1008 Legal Research

0 credit points. TBA. **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 1010 Torts

6 credit points. Mr David Rolph (Convenor - Semester 1 - Graduate Law); Associate Professor Barbara McDonald (Convenor - Semester 2 - Combined Law). **Session:** Semester 2. **Classes:** Two 2 hr seminars per week. **Prerequisites:** Foundations of Law.

NB: Unit is part of the Combined Law program for students commencing in 2005.

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;
- (l) Defences to negligence;
- (m) Breach of statutory duty;
- (n) Nuisance; and
- (o) Liability for animals.

LAWS 3000 Federal Constitutional Law

10 credit points. Professor George Winterton (Convenor). **Session:** Semester 1. **Classes:** Two 2 hr seminars per week. **Prerequisites:** 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. Mr Bernard Dunne (convenor). **Session:** Semester 2. **Classes:** Two 2 hr seminars per week.

NB: Unit is part of the Combined Law program for re-enrolling students in 2005

Law, Lawyers and Justice has a distinct intellectual focus. Most subjects in the law curriculum are concerned primarily with examining judicial decisions, and the statutes, framework and functions of state administration. In contrast, Law, Lawyers and Justice concentrates on what lawyers do, do not do, and should do, as well as on strategies to influence them to do better - better in two intertwined domains, namely, legal competence and ethical responsibility.

3. Undergraduate tables and units of study

Law, Lawyers and Justice begins with mapping the different forms of legal practice, examining their work environments, appraising the social worth of legal services, and suggesting alternative ways of being a lawyer. It then examines law as a profession, investigating how it is structured and regulated. Next, the subject proceeds to analyse lawyer-client relations. Here the major aims are to determine how clients are treated by lawyers, what formal rules and principles are used to mould the behaviour of lawyers, and in what ways the relationship should be changed in the interests of both equality and effective communication. Finally, Law, Lawyers and Justice investigates the adversary system and considers its advantages and limitations. The material in this part of the subject, addresses the effects an adversarial legal culture has on the way lawyers interact with clients and opposing parties. It also analyses current regulatory measures designed to curb the actions of lawyers within the adversary system. A central theme, constantly revisited in Law, Lawyers and Justice, is the questioning of how ethics and law should be conceived and practiced, as well as the appropriate interdependencies between the ethical and the legal.

Liberal Studies units of study

ENGL 1000 University English

6 credit points. Dr. Thomas. **Session:** Summer, Winter, Semester 1, Semester 2. **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:** Assignments include two 500-word writing tasks and two 500-word editing tasks.

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. Mr. Ronalds. **Session:** Semester 2, Semester 1. **Classes:** One 1hr lecture and one 2hr workshop. **Assessment:** Two 500wd assignments, one 1500wd essay, one 1.5hr examination, and workshop participation.

NB: Department permission required for enrolment.

This unit of study will introduce student 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. Dr J Simpson. **Session:** Semester 1. **Classes:** two 1 hr lectures with 1 hr seminar & one optional 1 hr tutorial per week. **Assessment:** one 1hr 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 students 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 (www.usyd.edu.au/marine).

MARS 2005 Global Oceans (Introduction)

6 credit points. 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. **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. Dr Peter Cowell. **Session:** Semester 2. **Classes:** 3 lec + 6 tutorial/sem + 1 day field excursion. **Assumed Knowledge:** MARS2005. **Prerequisites:** 24 credit points of Junior units of study from Science Discipline Areas. **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. Prof Andy Short. **Session:** S1 Intensive. **Classes:** Field school, 4 x 3 hr pracs. **Prerequisites:** 24 credit points of Junior Science units. **Corequisites:** MARS (2005 or 2905).. **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 field-work 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. 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. The practical classes are intended to familiarise the student with laboratory and data processing techniques.

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. 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. **Assessment:** One 2hr exam, 8 assignments, participation in field trip activities.

NB: This unit of study is available to advanced students only.

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 2906 Marine Ecosystems and Geomorphology Adv

6 credit points. Dr Peter Cowell. **Session:** Semester 2. **Classes:** 3 lec + 6 tutorial/sem + 1 day field excursion. **Prerequisites:** 24 credit points of Junior units of study from Science Discipline Areas. **Assessment:** One 2hr exam and assignments.

NB: This unit of study is available to advanced students only.

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 2907 Marine Science Field School (Advanced)

6 credit points. Prof Andy Short. **Session:** S1 Intensive. **Classes:** Field school and prac/sem 3hr/wk. **Prerequisites:** 24 credit points of Junior Science units. **Corequisites:** MARS (2005 or 2905). **Assessment:** 2500w field report and participation in field school activities.

NB: This unit of study is available to advanced students only.

Marine Scientists are generally involved in a wide variety of field work 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 focussed 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 data analysis-based data collected during the field school. These data will provide resources for the practical/seminar part of the course undertaken during the semester.

Practical: The 4 practical classes are intended to familiarise the student with data processing techniques and report writing and are intended to draw the connection between fieldwork and theoretical issues discussed in the Introductory Marine Science units.

Marine Science Senior units of study

Students in the Bachelor of Science intending to major in Marine Science should enrol in Senior MARS units of study to a total worth of 24 credit points. Students in the Bachelor of Science (Marine Science) must enrol in a minimum of 36 credit points of Senior Marine Science units of study.

There are 7 electives available in Semester 1 and 6 electives in Semester 2. The majority of the electives are of half-semester duration only and are grouped into each half (see list below). Alternatively, students enrolled in the Bachelor of Science (Marine Science) may apply to replace one or more of these electives with Tropical Marine Science (NTMP) units. Students are encouraged to select those electives in which they have a particular interest, subject to certain conditions. All prerequisites must be met and selection of electives must be managed to avoid too much study in any one half semester. That is, no student may do more than 12 credit points in any one half semester. All enrolments are to be registered with and

approved by the Undergraduate Advisor of USIMS on the first day of Semester 1. You may be required to change your selection on the basis of these rules.

Semester 1 (weeks 1-7 inclusive)

MARS 3003, MARS 3005, BIOL 3011*

Semester 1 (weeks 7-13 inclusive)

MARS 3004, MARS 3006, MARS 3008, BIOL 3013*

Semester 2 (weeks 1-7 inclusive)

MARS 3103, MARS 3105

Semester 2 (weeks 7-13 inclusive)

MARS 3104, MARS 3106

(*) 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 marine 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.

Registration

In addition to complying with enrolment procedures required by the University, all students in Senior Marine Sciences must register with the Marine Science Administration Office (Room 470, Madsen) during the first week of lectures. Enquiries should also be directed there.

Descriptions of options

Students should also consult electives (BIOL 3011/3911, BIOL 3013/3913) as listed in this chapter under Biological Sciences in this handbook.

MARS 3003 Coastal Depositional Environments

6 credit points. Prof Andy Short. **Session:** Semester 1a. **Classes:** 3 hrs lects & 3 hrs prac/wk, one half day excursion, one weekend excursion. **Prerequisites:** MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study. **Assessment:** Excursion report, 2 x 1500 word essays, 1 hr exam.

NB: From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study

Coastal depositional environments dominate the coast of Australia and most shorelines. They are dynamic systems responding to input sediments and processes as well as boundary conditions. This course focuses on high energy wave and wind dominated depositional systems manifest as beaches, dunes and barrier systems. It examines their formative processes and their global variation, before systematically looking at the beach-surf zone, backshore, dunes and barriers, including their Holocene evolution. The impact of lower waves and tides, embayments, structures and other environmental parameters are also considered. The surface morphology and stratigraphy of representative systems is examined on the excursions and in the practicals. The practicals also introduce students to field and laboratory techniques used in core logging and analysis of sediments. One assignment is based on the excursion and practical work, the second is based on library research of a section of the Australian coast.

Textbooks

Short, A.D. *Beach and Shoreface Morphodynamics*, John Wiley & Sons, 1999, Chichester, 379 pp.

Course Notes and other material also available at University Copy Centre

MARS 3004 Coastal Morphodynamics

6 credit points. Dr Peter Cowell. **Session:** Semester 1b. **Classes:** 3 hrs lects & 6 hrs pracs/wk & 3 hrs WebCT assignments/wk. **Prerequisites:** MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study. **Assessment:** Assignments, 1 hr exam.

NB: From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study

3. Undergraduate tables and units of study

Coastal Morphodynamics studies the modelling of complex environmental systems and management of uncertainty in predicting environmental change. Complexity here refers to time-dependent evolution of systems driven by variable inputs (stochastic non-linear dynamics). Specifically the course concerns formal methods to predict (and thus understand) changes in the geomorphology of coastal barrier and mainland beaches (and the associated sand dunes), estuaries (including their deltaic counterparts), coastal lowlands and continental shelves. The subject is of practical relevance to coastal management and planning, as well as to petroleum and mineral exploration. The option aims to provide (1) skills in managing complex problems in general, (2) an analytical understanding of coastal processes in particular, and (3) experience in application of computer simulation programs and vocationally relevant, commercial software packages. Practical work involves extensive use of computers.

MARS 3005 Marine Geophysical Data Analysis

6 credit points. A/Prof Dietmar Müller, Dr Michael Hughes. **Session:** Semester 1a. **Classes:** (12 hrs lecs, pracs)/wk, one weekend excursion. **Prerequisites:** MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409. **Assessment:** Assignments, 2 hr exam.
NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.

Exploring the sediments/rocks that make up the deep ocean floor and the continental shelves requires the use of remote sensing techniques, and the analysis of geophysical data. This unit teaches analytical and interpretive skills in both these areas, with a focus on: basic signal properties, convolution and correlation, numerical transforms, time series (harmonic and spectral) analysis, filtering, and image analysis. It covers a variety of data types including wave and current data, multibeam seafloor data, gravity, magnetic and heatflow data, seismic reflection data, video imagery, and satellite altimetry. All practical exercises are carried out in an integrated LINUX/Matlab computer environment. The unit is relevant to students interested in marine geophysics and geology, offshore engineering, as well as geological or physical oceanography.

Textbooks
Müller, R. D., and Hughes, M., Marine geophysical data analysis, (available at University Copy Centre).

MARS 3006 Dynamics of Ocean Basins and Margins

6 credit points. A/Prof Dietmar Müller. **Session:** Semester 1b. **Classes:** (12 hrs lecs, pracs)/wk, one weekend excursion. **Assumed Knowledge:** Prior completion of MARS3005 is highly recommended. **Prerequisites:** MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409. **Assessment:** Assignments, 2 hr exam.
NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.

This module explores the processes that have shaped the abyssal plains, deep sea trenches, continental shelves and slopes of the ocean basins. Plate tectonic processes in the ocean basins and margins control the production of magma and the destruction of crust, which collectively lead to changes in sea level, geochemistry and sedimentation, and drive the formation of basins and mountain belts with associated natural resources. The class introduces the basics of geodynamics as well as research at the cutting edge of modelling our dynamic Earth with an emphasis of data collected by remote sensing and at sea. The physical mechanisms forming different types of basins are examined and their relevance for petroleum resources is explored, based on thermal and mechanical models for the evolution of sedimentary basins and continental shelves. All practical exercises are carried out in a LINUX/Matlab computer environment, and require previous knowledge of Matlab and data analysis techniques based on Fourier transforms as covered in MARS3005. The class is relevant to all students interested in using computational methods to learn how the Earth works.

Textbooks
Müller, R. D., Dynamics of ocean basins and margins, (available at University Copy Centre).

MARS 3008 Energy: Science, Engineering & Economics

6 credit points. Prof Peter Davies, Dr Gavin Birch. **Session:** Semester 1. **Classes:** (12 hrs lecs, pracs)/wk, one weekend excursion. **Prerequisites:** MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409. **Assessment:** Assignments, field work, 2 hr exam.
NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.

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 sequence stratigraphy. 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, whereas the modern concepts of sequence stratigraphy and seismic stratigraphy 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 a 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.

MARS 3103 GIS Simulation Modelling

6 credit points. Dr Peter Cowell. **Session:** Semester 2a. **Classes:** (3 hrs lecs, 6 hrs pracs)/wk & 3 hrs WebCT assignments/wk. **Prerequisites:** MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study. **Assessment:** Assignments, 1 hr exam.
NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study.

Specific aims of the unit are to provide (a) an introduction to technical issues in Geographic Information Systems (GIS), (b) experience in using GIS techniques ('hands on'), and (c) insights into use of GIS to combine theory and environmental data for practical prediction in environmental management (ie. through simulation modelling). The lectures illustrate how Geographic Information Systems can be applied by people working in marine sciences, and provide an introduction to the nuts and bolts of GIS. The technical lectures are based on a leading GIS textbook. The practical work focuses on application of GIS techniques to coastal management project. Practical work involves extensive use of computers.

MARS 3104 Coastal Zone Management

6 credit points. Dr Eleanor Bruce. **Session:** Semester 2b. **Classes:** (3 hrs lecs, 4 hrs pracs)/wk, field trip. **Prerequisites:** MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study. **Assessment:** Assignments, exam.
NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study.

Aims of the unit: (a) To assist you to identify significant problems in resource management in the coastal zone, to enhance your understanding of the origins of these problems at the interface between the natural and human environments, and the nature of human responses to them; (b) To equip you with some conceptual models for the management of problems in resource management in the coastal zone; and (c) To teach you some of the fundamental skills in analysis of environmental problems, including the use of remotely sensed information in resource management.

MARS 3105 Coastal Oceanography & Sediment Dynamics

6 credit points. Dr Michael Hughes. **Session:** Semester 2a. **Classes:** (12 hrs lecs, pracs)/wk, one weekend excursion. **Prerequisites:** MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study or CIVL2409. **Assessment:** Assignments, 2 hr exam.
NB: From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.

The scope of this unit of study is intended to have wide appeal: encompassing students with interests ranging from Earth systems modelling through to managing marine environments. You will learn about the fundamental principles that govern fluid and sediment movement in coastal waters, develop computational analysis and modelling skills that enable you to solve practical problems, and explore the wider application of this knowledge and skills base to environmental issues in the Australasian region.

The lecture program addresses a range of physical processes relating to waves, tides, nearshore currents, and their combined influence on coastal sediment transport. The practical program provides hands-on experience with coastal oceanographic data collection, and the use of a wide range of computational analysis and modelling techniques. The practical exercises use real data sets collected during recent research programs, and address issues specific to Australia's coastal seas.

MARS 3106 Physical Marine Habitat

6 credit points. Dr Julie Dickinson. **Session:** Semester 2b. **Classes:** (12 hrs lecs, pracs)/wk, one weekend excursion. **Prerequisites:** MARS (2001 and 2002) or 16 credit points of Intermediate Science including at least 8 credit points from Geology or Geography units of study. **Assessment:** Assignments, presentations, 2 hr exam. **NB:** From 2006 the prerequisites will be: MARS (2005 or 2905) and MARS (2006 or 2906) or 12 credit points of Intermediate Science units including at least 6 credit points from Geology or Geography units of study or CIVL2409.

The aim of this unit of study is to provide the student with skills to analyse sea floor environments and their respective physical, chemical and biological processes. A variety of geological, geochemical, oceanographic and biological data will be used to interpret the sea floor, particularly in the Australian Exclusive Economic Zone. The Regional Marine Plans being set up under Australia's Oceans Policy will receive particular attention. Marine survey data sets and computer simulation, including 3-D VisLab facilities, will be used to interpret the sea floor. Students will develop skills to analyse remote sensing images (sonar, swath-mapping) of the sea floor and seismic reflection profiles of the sub-sea floor. The practical content of the course will develop students' skills in field experimentation and sampling, and the interpretation of physical processes from the study of sedimentary textures and structures. Samples from the shelf, slope and deep-sea will enable examination of the role of plants and animals in modifying sediment texture and composition. Ocean Drilling Program data will be used to show how and why sedimentary environments have changed through time, particularly the past 100 million years. In seminars students will develop communication and presentation skills by critical analysis of current controversies in marine science and proposals to resolve them. There will be a one-day weekend field trip on Sydney Harbour.

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. A minimal WAM score is usually set for entry into Honours in Marine Sciences, preferably during the July semester of the Senior program and otherwise as soon as possible after publication of the Senior units of study examination results. 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 eligible to enrol in units of study offered as part of the Tropical Marine Network Program. The TMNP is a joint program of the University of Sydney, the University of Queensland and James Cook University, and will offer four units of study in tropical marine science, all to be 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 program contains four units of study, each worth 6 credit points and all of which are 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 will be offered each year, together with two to three of the other units. The prerequisites for all units will be the successful completion of the first year of the BSc (Marine Science) course or equivalent, and the completion of MARS2005/2905 and MARS2007/2907.

Students may enrol in these units in academic year 2 and year 3 as part of the BSc (Marine Science). In order to major in Tropical Marine Science, students must successfully complete at least two and no more than three of the NTMP units of study.

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. 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. **Session:** S2 Intensive. **Classes:** Fieldwork, 80 hours block mode. **AssumedKnowledge:** General concepts in Biology. **Prerequisites:** MARS (2003 and 2001) plus 16 credit points from Intermediate Science units of study. **Corequisites:** MARS(2006 or 2906). **Assessment:** Report.

NB: Department permission required for enrolment. These units are only available to BSc (Marine Science) students. From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2007 or 2907) MARS (2003 and 2001) plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. 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 and 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 photosynthetic 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. **Session:** S2 Intensive. **Classes:** Fieldwork, 80 hours block mode. **AssumedKnowledge:** General concepts in Biology. **Prerequisites:** MARS (2003 and 2001) plus 16 credit points from Intermediate Science units of study. **Corequisites:** MARS(2006 or 2906). **Assessment:** Report.

NB: Department permission required for enrolment. These units are only available to BSc (Marine Science) students. From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2007 or 2907) MARS (2003 and 2001) plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. 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. **Session:** S2 Intensive. **Classes:** Fieldwork, 80 hours block mode. **AssumedKnowledge:** General concepts in Biology. **Prerequisites:** MARS (2003 and 2001) plus 16 credit points from Intermediate Science units of study. **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. From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2007 or 2907) MARS (2003 and 2001) plus 12 credit points from Intermediate Science units of study which must include at least 6 credit points of Biology. 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. **Session:** S2 Intensive. **Classes:** Fieldwork, 80 hours block mode. **AssumedKnowledge:** General concepts in Biology. **Prerequisites:** MARS (2003 and 2001) plus 16 credit points from Intermediate Science units of study. **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. From 2006 the prerequisites will be: MARS(2005 or 2905) and MARS(2007 or 2907) MARS (2003 and 2001) plus 12 credit points from

3. Undergraduate tables and units of study

Intermediate Science units of study which must include at least 6 credit points of Biology. 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 three levels, viz. 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.

Web Site: 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 web site 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.

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. Each unit of study uses both computers and graphics calculators as aids to the development of mathematical ideas.

There are comprehensive 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. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics. **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.

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

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1012 Life Sciences Algebra

3 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics. **Assessment:** One 1.5 hour examination, assignments and quizzes. MATH 1012 is designed to provide algebra for students of the life sciences who do not intend to undertake higher year mathematics and statistics.

This unit of study introduces matrices, systems of linear equations and linear programming and counting techniques.

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

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1013 Differential and Difference Equations

3 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics. **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.

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

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1015 Life Science Statistics

3 credit points. **Session:** Summer, Semester 1. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics. **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. It 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 comprehensive 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 are encouraged to enrol in other Advanced units of study.

MATH 1001 Differential Calculus

3 credit points. **Session:** Summer, Semester 1. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 1. **Assessment:** One 1.5 hour examination, assignments and quizzes.

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

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

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

Textbooks

As set out in the Junior Mathematics Handbook.

MATH 1002 Linear Algebra

3 credit points. **Session:** Semester 1, Summer. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 1. **Assessment:** One 1.5 hour examination, assignments and quizzes.

MATH1002 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.

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

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1003 Integral Calculus and Modelling

3 credit points. **Session:** Summer, Semester 2. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 2 or MATH 1001. **Assessment:** One 1.5 hour examination, assignments and quizzes.

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

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

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

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1004 Discrete Mathematics

3 credit points. **Session:** Summer, Semester 2. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 1. **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.

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

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1005 Statistics

3 credit points. **Session:** Summer, Semester 2. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics. **Assessment:** One 1.5 hour examination, assignments and quizzes.

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

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

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

Textbooks

As set out in the Junior Mathematics Handbook

Mathematics & 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 comprehensive 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 are encouraged to 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 Normal 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. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 2. **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.

3. Undergraduate tables and units of study

This unit of study parallels the normal unit MATH 1001 but goes more deeply into the subject matter and requires more mathematical sophistication.

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

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1902 **Linear Algebra (Advanced)**

3 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 2. **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.

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

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1903 **Integral Calculus and Modelling Advanced**

3 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 2 or Credit or better in MATH (1001 or 1901). **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 sophistication.

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

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1904 **Discrete Mathematics (Advanced)**

3 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. **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.

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

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1905 **Statistics (Advanced)**

3 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Assumed Knowledge:** HSC Mathematics Extension 2 or result in Band E4 of HSC Mathematics Extension 1. **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.

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

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1906 **Mathematics (Special Studies Program) A**

3 credit points. **Session:** Semester 1. **Classes:** 2 lec, 1 sem, 1 tut/wk. **Prerequisites:** UAI of at least 98.5 and result in Band E4 HSC Mathematics Extension 2; by invitation. **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 MATH1901 Differential Calculus (Advanced). In addition there will be a selection of special topics, which are not available elsewhere in the Mathematics and Statistics program.

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

MATH 1907 **Mathematics (Special Studies Program) B**

3 credit points. **Session:** Semester 2. **Classes:** 2 lec, 1 sem & 1 tut/wk. **Prerequisites:** Distinction in MATH1906; by invitation. **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.

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

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 2001 Vector Calculus and Complex Variables

4 credit points. **Session:** Summer. **Classes:** 3 lec & 1 tut/wk. **Prerequisites:** MATH (1001 or 1901 or 1906) and (1002 or 1902) and (1003 or 1903 or 1907). **Assessment:** One 2hr exam, assignments, tutorial quizzes.

This unit of study has two major components: firstly, a study of functions of several real variables from a vector point of view, and secondly an introduction to functions of a complex variable. Vector calculus topics include line integrals and multiple integrals, surface integrals, change of variables, theorems of Green, Gauss and Stokes with their physical significance. Complex variables topics include definitions and properties of complex functions, differentiability, Cauchy Riemann conditions and analyticity, contour integration and residues.

MATH 2002 Matrix Applications

4 credit points. **Session:** Summer. **Classes:** 2 lec, 1 tut & 1 computer lab/wk. **Prerequisites:** MATH (1002 or 1902) or Distinction in MATH 1012. **Assessment:** One 2hr exam, assignments, tutorial quizzes.

This unit is a continuation of the first year unit MATH 1002. It starts with an examination of the computational efficiency of various methods of solving linear systems, then discusses LU factorisation of a matrix and partial pivoting. The first year work on vectors and matrices is put in a more general setting by developing vector space theory (axioms of a vector space, subspace, linear independence and basis, rank and nullity, linear transformations, eigenvalues and eigenvectors, diagonalisation, orthogonal diagonalisation). These theoretical topics are illustrated by applications, which include fitting polynomials to data sets, applying rotations, reflections, shears and scalings to the plane, solving linear recurrence relations and systems of linked differential equations by diagonalisation, optimising constrained quadratic forms using orthogonal diagonalisation and developing numerical methods of finding eigenvalues and eigenvectors.

MATH 2005 Fourier Series & Differential Equations

4 credit points. **Session:** Summer. **Classes:** 3 lec & 1 tut/wk. **Prerequisites:** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907). **Assessment:** One 2hr exam, assignments, quizzes.

In the Fourier Series segment, periodic phenomena such as wave motion are given a systematic treatment. The basic problem is to represent a periodic function of one variable as the sum of an infinite series of sines and cosines. The theory has extensive applications in engineering, acoustics, internal and surface waves in fluids, etc., as well as in pure mathematics. Then a review of first order equations is followed by a systematic treatment of second order equations using the methods of variation of parameters, undetermined coefficients and the theory of Laplace Transforms. Linear systems of differential equations are treated using matrices and vectors. The final part of the unit of study deals with partial differential equations with the emphasis on the application of the method of separation of variables to first and second order linear equations and on Laplace transforms for initial value problems.

MATH 2009 Graph Theory

4 credit points. **Session:** Summer. **Classes:** 3 lec & 1 tut/wk. **Prerequisites:** 6 credit points of Junior Mathematics (at the Distinction level in Life Sciences units). **Assessment:** One 2hr exam, assignments, quizzes.

Graph theory is a branch of discrete mathematics with important applications in almost every branch of science, and particularly in computer science and engineering. (In graph theory, a graph is a set of points and a set of edges -- not the graph of a function.)

Topics covered include: Eulerian graphs, Hamiltonian graphs, trees, shortest paths, planar graphs, colouring of graphs and maps, transport networks, activity networks, matching theory, digraphs.

Many applications are considered, and some famous graph theory problems discussed.

MATH 2011 Topics in Discrete Mathematics

4 credit points. **Session:** Summer. **Classes:** 2 lec, 1 tut & 1 prac/wk. **Assumed Knowledge:** HSC Mathematics Extension 1. **Prerequisites:** 6 credit points of Junior Mathematics. **Assessment:** One 2hr exam, assignments, quizzes.

In this unit 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 include recursion; summation techniques; recurrences and generating functions; elementary number theory, including an introduction to primality testing and cryptography; combinatorics, including connections with probability theory; asymptotics and analysis of algorithms; set theory and logic.

Textbooks

Printed notes for purchase, made available by lecturer.

MATH 2061 Linear Mathematics and Vector Calculus

6 credit points. **Session:** Semester 1. **Classes:** 3 lec, 1 tut and 1 practice class/wk. **Prerequisites:** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907). **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 2063 Math Computing and Nonlinear Systems

6 credit points. **Session:** Semester 1. **Classes:** 3 lec, 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). **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 2065 Partial Differential Equations (Intro)

6 credit points. **Session:** Semester 2. **Classes:** 3 lec, 1 tut, 1 example class/week. **Prerequisites:** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902) and MATH (1003 or 1903 or 1907). **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 2068 Number Theory and Cryptography

6 credit points. **Session:** Semester 2. **Classes:** 3 lec, 1 tut & 1 computer lab/wk. **Prerequisites:** 9 credit points of Junior level Mathematics including MATH (1002 or 1902). **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.

Textbooks

See School website.

MATH 2069 Discrete Mathematics and Graph Theory

6 credit points. **Session:** Semester 1. **Classes:** 3 lec, 1 tut & 1 practice class/wk. **Prerequisites:** 6 credit points of Junior level Mathematics. **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

3. Undergraduate tables and units of study

study of data structures), planar graphs, the study of chromatic polynomials (important in scheduling problems), maximal flows in networks, matching theory.

MATH 2070 **Optimisation and Financial Mathematics**

6 credit points. **Session:** Semester 2. **Classes:** 3 lec, 1 tut or computer lab (alternating weeks), 1 optional computer lab. **Assumed Knowledge:** MATH (1003 or 1903 or 1907). **Prerequisites:** MATH (1001 or 1901 or 1906) and MATH (1002 or 1902). **Assessment:** 3 hr exam, assignments, quizzes.

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 is an introduction to financial concepts and terminology, and some of the methods for pricing securities and evaluating investments in the absence of risk. This includes material on the riskless term structure of interest rates; the modelling of investments modelled by difference and differential equations; arbitrage and the Efficient Market Hypothesis; the net present value and internal rate of return; bonds; simple optimisation problems in finance. The third part of the unit deals with risky securities and investments and includes material on: modelling risky assets by random variables; pricing by the expectations hypothesis; pricing under the principle of expected utility; state space security pricing; complete and incomplete markets. Some understanding of probability theory and statistical distributions is required in this section.

Theory developed in lectures will be complemented by computer laboratory sessions using MATLAB. Minimal computing experience will be required.

MATH 2961 **Linear Mathematics & Vector Calculus Adv**

6 credit points. **Session:** Semester 1. **Classes:** 4 lec & 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). **Assessment:** 3 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. **Session:** Semester 1. **Classes:** 3 lec, 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). **Assessment:** 3 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 2963 **Math Computing & Nonlinear Systems (Adv)**

6 credit points. **Session:** Semester 1. **Classes:** 3 lec, 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). **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 2965 **Partial Differential Equations Intro Adv**

6 credit points. **Session:** Semester 2. **Classes:** 3 lec, 1 tut, 1 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)}. **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 2968 **Algebra (Advanced)**

6 credit points. **Session:** Semester 2. **Classes:** 3 lec, 1 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). **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.

Textbooks

See School website

MATH 2969 **Discrete Mathematics & Graph Theory Adv**

6 credit points. **Session:** Semester 1. **Classes:** 3 lec, 1 tut & 1 practice class/wk. **Prerequisites:** 9 credit points of Junior Mathematics (advanced level or Credit at the normal level). **Assessment:** Two 1.5 hour exams, assignments, quizzes.

This unit will cover the same material as MATH2069 with some extensions and additional topics.

Textbooks

See School website

MATH 2970 **Optimisation & Financial Mathematics Adv**

6 credit points. **Session:** Semester 2. **Classes:** 3 lec, 1 tut or computer lab (alternating weeks), 1 optional 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). **Assessment:** 3 hr exam, assignments, quizzes.

The content of this unit of study parallels that of MATH2710, but with more emphasis on Advanced topics, including the Fundamental Duality Theorem, game theory, state security prices, risk neutral pricing and binomial option pricing.

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. **Session:** Semester 1. **Classes:** 3 lec, 1 tut, 1 computer lab/wk. **Prerequisites:** MATH (1001 or 1901 or 1906 or 1011) and [MATH (1005 or 1905 or 1015) or STAT1021]. **Assessment:** 3 hr exam, assignments, quizzes, computer practical reports, one 1hr 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. **Session:** Semester 2. **Classes:** 3 lec, 1 tut, 1 computer lab per wk. **Assumed Knowledge:** STAT (2011 or 2002). **Prerequisites:** MATH (1005 or 1905 or 1015). **Assessment:** 3 hr exam, assignments, quizzes, computer practical reports, one 1hr 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. **Session:** Semester 1. **Classes:** 3 lec, 1 tut, 1 computer lab/wk. **Prerequisites:** MATH (1903 or 1907 or Credit in 1003) and MATH (1905 or Credit in 1005). **Assessment:** 3 hr exam, assignments, quizzes, computer practical reports, one 1hr 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. **Session:** Semester 2. **Classes:** 3 lec, 1 tut, 1 computer lab/wk. **Assumed Knowledge:** STAT (2911 or 2901). **Prerequisites:** MATH1905 or Credit in MATH1005. **Assessment:** 3 hr exam, assignments, quizzes, computer practical reports, one 1hr 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.

Mathematics Senior units of study

The School of Mathematics and Statistics provides a range of Senior units of study, each worth 4 credit points, covering a wide variety of topics in Pure and Applied Mathematics. Students may take up to 12 units of study (48 credit points) or more at Senior level. Those intending to proceed to Honours or simply to major in mathematics must take a minimum of 6 units of study (24 credit points) from the Science Discipline Area of Mathematics.

The units of study are taught at either the Normal or the Advanced level. Entry into the advanced units of study is restricted to students who have met various prerequisite conditions. Students should con-

sult the list below for requirements of individual Advanced units of study, and seek advice from the Senior year coordinators.

The School encourages students undertaking an Advanced program to choose 3 or 4 units of study at the Advanced level.

Students wishing to keep open the possibility of undertaking an Honours year are strongly advised to consult a Senior year adviser about their choice of units of study.

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 to either. Details for each unit of study appear below, whilst full details of the 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.

It should be noted that not all units of study are offered each year and any unit may be withdrawn due to resources constraints.

Pure units of study (each 4 credit points)

Semester 1

- Algebra I (Advanced) MATH 3902
- Categories and Computer Science (Advanced) MATH 3905 (odd years only)
- Complex Variable (Advanced) MATH 3904
- Differential Geometry (Advanced) MATH 3903
- History of Mathematical Ideas MATH 3004
- Logic MATH 3005
- Metric Spaces (Advanced) MATH 3901
- Ordinary Differential Equations MATH 3003
- Rings and Fields MATH 3002
- Topology MATH 3001

Semester 2

- Algebra II (Advanced) MATH 3907 (even years only)
- Coding Theory MATH 3007
- Financial Mathematics 2 MATH 3015
- Financial Mathematics 2 (Advanced) MATH 3933
- Geometry MATH 3006
- Group Representation Theory (Advanced) MATH 3906 (odd years only)
- Information Theory MATH 3010
- Lebesgue Integration & Fourier Analysis (Adv.) MATH 3909
- Nonlinear Analysis (Advanced) MATH 3908
- Number Theory MATH 3009
- Public Key Cryptography (Advanced) MATH 3925
- Real Variables MATH 3008

Applied units of study (each 4 credit points)

Semester 1

- Differential Geometry (Advanced) MATH 3903
- Fluid Dynamics (Advanced) MATH 3914

3. Undergraduate tables and units of study

- History of Mathematical Ideas MATH 3004
- Mathematical Computing I MATH 3016
- Mathematical Computing I (Advanced) MATH 3916
- Partial Differential Equations and Waves MATH 3018
- Partial Differential Equations and Waves (Advanced) MATH 3921
- Signal Processing MATH 3019
- Signal Processing (Advanced) MATH 3919

Semester 2

- Coding Theory MATH 3007
- Financial Mathematics 2 MATH 3015
- Financial Mathematics 2 (Advanced) MATH 3933
- Hamiltonian Dynamics (Advanced) MATH 3917
- Information Theory MATH 3010
- Mathematical Methods (Advanced) MATH 3915
- Nonlinear Analysis (Advanced) MATH 3908
- Nonlinear Systems and Biomathematics MATH 3020
- Nonlinear Systems and Biomathematics (Advanced) MATH 3920

Relation to other units of study and recommendations

In general, 6 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 coordinator.

Students intending to major in Pure Mathematics should choose at least 6 units of study from the Pure list above; 3 units of study each semester is the normal choice. Intending Honours students are strongly encouraged to include Mathematics 3901 and 3902.

Students intending to major in Applied Mathematics should choose at least 6 units of study from the Applied list above.

A double major would require a choice of 12 units of study from the lists above.

Particular combinations would be suitable for students with special interests.

Computer Science students: Mathematics 3001, 3002 or 3902, 3005, 3905, 3006, 3007, 3009, 3010, 3015 or 3933, 3016 or 3916, 3019 or 3919, 3925.

Engineering (BSc/BE) students: Mathematics 3001 or 3901, 3003, 3005, 3019 or 3919, 3903, 3904, 3007, 3008, 3010, 3908, 3909, 3015 or 3933, 3016 or 3916, 3018, 3020 or 3920, 3914, 3915, 3917, 3025.

Physics or Chemistry students: Mathematics 3001 or 3901, 3002, 3003, 3914, 3917, 3903, 3904, 3006, 3008, 3009, 3010, 3908, 3909, 3015 or 3933, 3016 or 3916, 3018, 3019 or 3919, 3020 or 3920, 3906, 3915.

Prospective teachers of Mathematics: Mathematics 3001 or 3901, 3002 or 3902, 3003, 3004, 3005, 3006, 3007, 3008, 3009, 3010, 3016 or 3916, 3018, 3019 or 3919, 3020 or 3920.

MATH 3001 Topology

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics. **Assessment:** One 2hr exam, assignments. Topology can be considered as a branch of geometry, and it has been called 'rubber sheet geometry', because it originated in the study of figures which are invariant under elastic deformations. It now forms a basic framework for fields such as functional analysis and nonlinear differential equations.

This unit of study covers a number of the more elementary aspects of both general and combinatorial topology. Topics discussed include continuous mappings and homeomorphisms, compactness, and the combinatorial classification of surfaces.

MATH 3002 Rings and Fields

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2008 or 2908). **Assessment:** One 2hr exam, assignments.

This unit of study is concerned primarily with the algebraic systems such as rings and fields, which are generalizations of familiar examples such as polynomials and real numbers. It generalizes familiar notions of divisibility, greatest common divisors and primality from the integers to other rings, and considers homomorphisms and quotient structures.

MATH 3003 Ordinary Differential Equations

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2001 or 2901). **Assessment:** One 2hr exam, assignments.

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 be not 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.

MATH 3005 Logic

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** (for all but BCST students) 8 credit points of Intermediate Mathematics; (for BCST students) 8 credit points of Intermediate Mathematics or 12 credit points of Junior Mathematics at Advanced level. **Assessment:** One 2hr exam, assignments.

This unit of study is mainly concerned with a general notion of computability, studied by means of Turing machines (simple abstract computers). In particular, it looks at some problems which cannot be solved by any computer. (Note: no experience with computing is required.) In the second part of the unit of study, the results from the first part are applied to mathematics itself. The conclusion is that there is no systematic way of discovering all mathematical truths.

MATH 3006 Geometry

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics (strongly advise MATH 1902 or 1002). **Assessment:** One 2hr exam, assignments.

Over the last 100 years or so, transformations have come to play an increasingly important role in geometry. In this unit of study, various groups of transformations are studied in some detail. Isometries, affine transformations, projective transformations, and the famous frieze groups are all discussed. The basic approach is via vectors (and matrices), emphasizing the interplay between geometry and linear algebra. Each provides insight into the other. The underlying theme of the unit is the classification of transformation groups in both Euclidean and projective planes.

MATH 3007 Coding Theory

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902). **Assessment:** One 2hr exam, assignments.

This unit of study provides a general introduction to the theory of error-correcting codes. After studying general error correcting block codes, with the aim of constructing efficient codes which can be practically implemented, it leads to the study of cyclic codes which are a special case of linear codes, with nice algebraic properties. This unit of study concludes with the construction of classes of cyclic codes that are used in the modern digital communication systems, including the code used in the compact disc player to correct errors caused by dust and scratches.

MATH 3008 Real Variables

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2007 or 2901 or 2907). **Assessment:** One 2hr exam, assignments.

The aim of this unit of study is to present some of the beautiful and practical results which continue to justify and inspire the study of analysis. The unit of study includes a review of sequence, series, power series and Fourier series. It introduces the notions of asymptotic and uniform convergence. Among topics studied are the Bernoulli numbers, Bernoulli polynomials, the Euler-Maclaurin summation formula, the Riemann zeta function and Stirling's approximation for factorials.

MATH 3009 Number Theory

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics. **Assessment:** One 2hr exam, assignments. This unit of study is an introduction to elementary number theory, with an emphasis on the solution of Diophantine equations (that is, finding integer solutions to such equations as $x^2 + y^2 = z^2$, $x^2 - 21y^2 = 1$). Three main tools are developed: (i) the theory of divisibility and congruence (up to quadratic reciprocity), (ii) geometric methods, and (iii) rational approximation (continued fractions).

MATH 3010 Information Theory

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901 and some probability theory). **Assessment:** One 2hr exam, assignments. This unit of study is a general introduction to the ideas and applications of information theory. The basic concept here is that of entropy, an idea which goes back more than a century to the work of Boltzmann. Interest in the concept was enormously increased by the work of Shannon in the late 1940's. He showed that entropy was a basic property of any (discrete) probability space, and established a fundamental relation between the entropy of a randomly varying signal and the maximum rate at which the signal could be transmitted through a communication line. Another interpretation of entropy is in terms of the financial value of information to a gambler. The unit of study covers applications in both areas; topics studied include data compression, gambling strategies and investment portfolios.

MATH 3015 Financial Mathematics 2

4 credit points. **Session:** Semester 2. **Classes:** 2 lec, 1 tut & 1 lab/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics including MATH 2033 or 2933 (and strongly advise MATH 2010 and STAT (2001 or 2901)). **Assessment:** One 2hr exam, quizzes, assignment, computer project. This unit is a follow-on from the Intermediate unit MATH 2033 (Financial Mathematics 1). The first part deals with modern portfolio theory, the second part with options and derivative securities. Topics covered include: mean-variance Markowitz portfolio theory, the Capital Asset Pricing Model, Arbitrage Pricing Theory, log-optimal portfolios and the Kelly criterion; calls and puts, profit-loss profiles for option strategies, arbitrage from mispricing, binomial random walk and the CRR-option pricing model, risk-neutrality, limit to the continuous time Black-Scholes model, sensitivity analysis, introduction to exotic options and derivative securities. Mathematical and statistical methods required: theory of quadratic programming, Lagrange parameters and Kuhn-Tucker theory, linear factor models in a statistical setting, advance probability theory including distributions and expectations, introduction to random walks and stochastic processes.

MATH 3016 Mathematical Computing I

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903 or 1906 or 1907. **Assessment:** One 2hr exam, assignments. This unit of study provides an introductory unit of study on Fortran 95 programming and numerical methods. Topics covered include computer arithmetic and computational errors, systems of linear equations, interpolation, solution of nonlinear equations, numerical quadrature and initial value problems for ordinary differential equations.

MATH 3018 Partial Differential Equations and Waves

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** MATH (2001 or 2901) and MATH (2005 or 2905). **Assessment:** One 2hr exam, assignments. After a review of ordinary differential equations this unit of study covers Sturm-Liouville eigenvalue problems and demonstrates their role in solving PDE's. The standard equations of mathematical physics, the wave equation, the diffusion (heat) equation and Laplace's equation, are treated, together with various applications.

MATH 3019 Signal Processing

4 credit points. **Session:** Semester 1. **Classes:** 2 lec, 1 tut & 1 lab/wk. **Prerequisites:** MATH (2001 or 2901) and MATH (2005 or 2905). **Assessment:** One 2hr exam, assignments, computer project. This unit of study is an introduction to the mathematical theory of Digital Signal Processing. It consists of both theory and application. A significant component of the unit of study involves computer exercises using MATLAB. Topics treated include analogue and digital signals, transforms, the spectral theory of digit signal and wavelets. Applications include sampling and aliasing, filter design and the basics of image processing.

MATH 3020 Nonlinear Systems and Biomathematics

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics (strongly advise MATH 2006 or 2906 or 2908 or 3003) and one of MATH (1001 or 1003 or 1901 or 1903). **Assessment:** One 2hr exam, assignments.

This unit of study is concerned with nonlinear ordinary and partial differential equations applied to biological systems. The applications will be drawn from predator-prey systems, transmission of diseases, chemical reactions, beating of the heart, neurons (nerve cells), and pattern formation. The emphasis is on qualitative analysis including phase-plane methods, bifurcation theory and the study of limit cycles. The unit of study will include some computer simulations as illustrations.

MATH 3901 Metric Spaces (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics (strongly advise MATH 2907). **Assessment:** One 2hr exam, assignments.

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.

MATH 3902 Algebra I (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics (strongly advise MATH 2902). **Assessment:** One 2hr exam, assignments.

In this unit the tools of modern algebra are developed as an introduction to Galois Theory, which deals with the solution of polynomial equations in one variable. The same tools provide an analysis of the classical problem of determining whether certain geometrical constructions, such as the trisection of a given angle, can be performed using only ruler and compasses. The unit begins with the definitions and basic properties of rings, homomorphisms and ideals, continues with an investigation of factorization in principal ideal domains such as the Gaussian integers and the ring of polynomials over a field, and concludes with a study of algebraic field extensions and their automorphisms.

MATH 3903 Differential Geometry (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901, with MATH 3001 or 3901). **Assessment:** One 2hr exam, assignments.

Differential Geometry is an important branch of mathematics in which one uses Calculus to study geometric objects, such as curves, surfaces and higher-dimensional objects. It also has close connections with classical and modern physics. This unit of study covers elementary properties of curves and surfaces in R^3 , following Do Carmo's book, leading to the celebrated Gauss-Bonnet Theorem. If time allows, either the language of differential forms will be introduced or some global theory of differential geometry will be developed.

MATH 3904 Complex Variable (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901, with MATH 3001 or 3901). **Assessment:** One 2hr exam, assignments.

This unit of study continues the study of functions of complex variables introduced in the Intermediate units of study (Mathematics 2001 or 2901) assuming some knowledge of algebra (for example, that covered in Mathematics 2008). It will be advantageous for students to also take either Mathematics 3901 Metric Spaces (Advanced), or Mathematics 3001 Topology if they intend to do this unit of study. The unit of study begins with a review of elementary properties of analytic functions, Cauchy's integral formula, isolated singularities and the calculus of residues. This will be followed by selected topics from the theory of uniform convergence, entire functions, gamma function, zeta function, elliptic functions, harmonic functions, conformal mappings, Riemann surfaces.

MATH 3906 Group Representation Theory (Advanced)

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics (strongly advise MATH 3902). **Assessment:** One 2hr exam, assignments.

NB: This unit is only offered in odd years.

This topic is a natural extension of linear algebra combined with group theory. Groups occur naturally wherever there is symmetry of any kind; linear algebra is the fundamental tool of solving equations. Representation theory provides techniques for analysing symmetrical systems of equations. The central problem of the subject is the decomposition of a complicated representation into simple constituents. The remarkable theory of group characters, which

3. Undergraduate tables and units of study

provide the algebraic machinery for this decomposition, is the main topic of the unit of study.

MATH 3907 Algebra II (Advanced)

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** MATH3902 or Credit in MATH3902, and 12 credit points of Intermediate Mathematics. **Assessment:** One 2hr exam, assignments.
NB: Department permission required for enrolment. This unit of study is only offered in even years.

This unit deals 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, analysis of the structure of finite Abelian groups, and techniques for obtaining canonical forms for matrices. Students will be assumed to be familiar with the basic concepts of ring theory.

MATH 3908 Nonlinear Analysis (Advanced)

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics (strongly advise MATH 3901). **Assessment:** One 2hr exam, assignments.

The purpose of this unit is to give an introduction to some modern ideas in the study of nonlinear dynamical systems. We concentrate largely on one-dimensional discrete systems. The dynamics of the apparently simple systems we study turn out to be remarkably complicated. We show how seemingly elementary nonlinear maps, such as quadratic maps, give rise to fractal sets. This leads into a discussion of concepts like topological conjugacy, symbolic dynamics, chaos theory, the Sarkovskii Theorem and, in particular, bifurcations of maps. We also study how period doubling bifurcations can lead to chaos; homeomorphisms of the circle and the rotation number. We give a more general discussion of the important topic of bifurcation theory.

MATH 3909 Lebesgue Int and Fourier Analysis (Adv)

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 12 credit points of Intermediate Mathematics (strongly advise MATH 2907 and MATH 3901). **Assessment:** One 2hr exam, assignments.

Integration is a very useful tool in many areas of mathematics. Lebesgue's theory of integration is the one used in most modern analysis, providing very general conditions under which integrals are defined. The theory is based on measure theory, which is a generalisation of the ideas of area and volume. Measure theory is also the foundation of probability theory, and is important for understanding many different subjects from quantum physics to financial mathematics. In this unit, measure theory is applied to the study of Fourier series and integrals. The first part deals with measure, outer measure, construction of measure and Lebesgue measure. The second part covers measurable functions, integration theory, Fatou's lemma, dominated convergence theorem. The third part deals with product measure, convolution, Fourier transform and Fourier inversion. The additional topics expectation, Radon-Nikodym derivative, and conditional probability may be covered, if time permits.

MATH 3914 Fluid Dynamics (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** MATH (2901 or credit in 2001) and MATH (2905 or credit in 2005). **Assessment:** One 2hr exam, assignments.

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 and Helmholtz's theorem. Topics covered include viscous flows, boundary layers, potential theory and 2-D airfoils, and complex variable methods. The unit of study concludes with an introduction to hydrodynamic stability and the transition to turbulent flow.

MATH 3915 Mathematical Methods (Advanced)

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** MATH (2901 or 2905 or 2907 or 3921) or Credit in MATH (2005 or 3018). **Assessment:** One 2hr exam, assignments.

This unit of study begins with a review of analytic functions, complex integration and power series. These techniques are applied to the evaluation of real variable integrals and summation of series. The second part is a study of some of the special functions of mathematical physics in the real and complex domains. Examples include various hypergeometric functions and their connection with certain ordinary and partial differential equations, and also elliptic functions and their connection with the simple pendulum and the spinning top. The third part introduces transforms methods, generalised functions and Green's functions with applications to boundary value problems.

MATH 3916 Mathematical Computing I (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics and one of MATH 1903 or 1907 or Credit in MATH 1003. **Assessment:** One 2hr exam, assignments.

See entry for MATH 3016 Mathematical Computing I.

MATH 3917 Hamiltonian Dynamics (Advanced)

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1hr tut/wk. **Prerequisites:** MATH 2904 or Credit in MATH 2004. **Assessment:** One 2hr exam, assignments. This unit of study provides a brief recapitulation of the essential features of Lagrange's equations and of the calculus of variations before introducing the Hamiltonian and deriving Hamilton's equations from a variational principle. Canonical transformations, that is, transformations which take a Hamiltonian system into a new Hamiltonian system, then lead in a natural way to the Hamilton-Jacobi equation of mechanics, by means of which any integrable Hamiltonian system is most readily solved. The role of action angle variables in perturbation theory is described, and a brief introduction to the onset of chaos in Hamiltonian systems is given. In the last part the use of Pontriagin's principle in optimisation and control theory is discussed.

MATH 3919 Signal Processing (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** 2 lec, 1 tut & 1 lab/wk. **Prerequisites:** MATH 2905 or Credit in MATH 2005. **Assessment:** One 2hr exam, assignments, computer project.

As for MATH 3019 but with more advanced problem solving and assessment tasks. Some additional topics may also be included.

MATH 3920 Nonlinear Systems & Biomathematics (Adv)

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics (strongly advise MATH 2908 or 3003) and one of MATH 1903 and 1905 or 1903 and 1904 or Credit in (MATH 1003 and 1005) or MATH (1003 and 1004). **Assessment:** One 2hr exam, assignments.

See entry for MATH 3020 Nonlinear Systems and Biomathematics.

MATH 3921 P D E and Waves (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** MATH (2901 or credit in 2001) and (2905 or credit in 2005). **Assessment:** One 2hr exam, assignments.

As for MATH 3018 but with more advanced problem solving and assessment tasks. Some additional topics may also be included.

MATH 3923 Ordinary Differential Equations (Adv)

4 credit points. **Session:** Semester 1. **Classes:** 2 lectures & 1 tutorial per week. **Assumed Knowledge:** MATH2901 and MATH2902. **Prerequisites:** 12 credit points of intermediate mathematics. **Assessment:** One 2hr exam, assignments, quizzes.

The theory of ordinary differential equations is a classical topic going back to Newton and Leibnitz. 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. This unit of study is an introduction to the subject covering a broad range of theoretical and applied methods. In particular, it covers some elementary methods to solve certain classes of equations. It then covers more theoretical aspect like existence and uniqueness theorems, stability of equilibria and orbits, linearization, hyperbolic critical points and the principle of linearized stability and instability for systems of first order equations. Special topics include the Bendixson negative criterion, -limit sets and limit cycles, the Poincaré-Bendixson theorem, Lyapunov functions and Lyapunov stability. Finally, power series solutions lead to an introduction to perturbation methods such as the Lindstedt-Poincaré method. All results and techniques will be illustrated by suitable examples from applications in areas like physics, biomathematics and chemistry.

MATH 3925 Public Key Cryptography (Advanced)

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 2 prac/wk. **Prerequisites:** 12 credit points from Intermediate or senior mathematics. Strongly recommend MATH 3902. **Assessment:** One 2hr exam plus assignments.

Public Key Cryptography (PKC) enables two parties to communicate securely over a public communications network, without them first having to exchange a secret key. PKC provides secure communications over the Internet, over mobile phone networks and in many other situations. This course draws on ideas from algebra, number theory and geometry to provide the student with a thorough grounding in the mathematical basis of the most popular PKC's. Specifically, the unit treats PKC's based on the difficulty of integer factorization (RSA), the discrete logarithm problem in a finite field (Diffie-Hellman, ElGamal) and the discrete logarithm problem in the group of rational points of an elliptic curve over a finite field. Attacks on these cryptosystems will be treated in some depth.

MATH 3933 Financial Mathematics 2 (Advanced)

4 credit points. **Session:** Semester 2. **Classes:** 2 lec, 1 lab & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Mathematics including MATH 2933 or Credit in

MATH2033 (and strongly advise MATH 2010 and STAT (2001 or 2901)). **Assessment:** One 2hr exam, quizzes, assignment, computer project.

As for Math 3015 but with more advanced problem solving and assessment tasks. Some additional topics may also be included.

Statistics Senior units of study

The School of Mathematics and Statistics provides several Senior units of study, each worth 4 credit points, in Statistics. Students wishing to major in Statistics should take 6 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 4 credit points) are listed below:

February Semester

- Distribution Theory and Inference STAT 3001
- Applied Linear Models STAT 3002
- Time Series Analysis STAT 3003
- Statistical Theory (Advanced) STAT 3901
- Linear Models (Advanced) STAT 3902

July Semester

- Design of Experiments STAT 3004
- Applied Stochastic Processes STAT 3005
- Sampling Theory and Categorical Data STAT 3006
- Design of Experiments (Advanced) STAT 3904
- Markov Processes (Advanced) STAT 3905
- Multivariate Analysis (Advanced) STAT 3907

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 6 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 3 units of study of Senior Statistics each semester, making 24 credit points in total.

STAT 3001 Distribution Theory and Inference

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** MATH (1003 or 1903 or 1907) and STAT (2003 or 2903). **Assessment:** One 2hr exam, assignments.

Multivariate distribution theory and linear transformations of variables. Properties of estimators, uniformly most powerful tests and likelihood ratio tests.

STAT 3002 Applied Linear Models

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut & 1 computer lab/wk. **Prerequisites:** STAT 2004 (or STAT 1022 for Arts students) and MATH (1002 or 1902). **Assessment:** One 2hr exam, assignments, one 1hr computer practical exam. Multiple regression, diagnostics, principal components, MANOVA, discriminant analysis.

STAT 3003 Time Series Analysis

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut & 1 computer lab/wk. **Prerequisites:** STAT (2003 or 2903). **Assessment:** One 2hr exam, assignments. Modelling and analysing time-dependent situations containing some dependence structure, ARMA models.

STAT 3004 Design of Experiments

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut & 1 computer lab/wk. **Assumed Knowledge:** STAT3002. **Prerequisites:** STAT2004 (or STAT1022 for Arts

3. Undergraduate tables and units of study

students) and MATH (1002 or 1902). **Assessment:** One 2hr exam, assignments, one 1hr computer practical exam.

Design and analysis of controlled comparative experiments, block designs, Latin squares, split-plot designs, 2^n factorial designs.

STAT 3005 Applied Stochastic Processes

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 2 tut/wk. **Prerequisites:** MATH (1003 or 1903 or 1907) and STAT (2001 or 2901). **Assessment:** One 2hr exam, assignments.

Discrete and continuous time Markov chains, introduction to Brownian motion.

STAT 3006 Sampling Theory and Categorical Data

4 credit points. **Session:** Semester 2. **Classes:** 2 lec, 1 tut & 1 computer lab/wk. **Prerequisites:** STAT 2003 or 2903. **Assessment:** One 2hr exam, assignments.

Sampling without replacement, stratified sampling, ratio estimation, systematic and cluster sampling, contingency tables, log linear models.

STAT 3901 Statistical Theory (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 2 tut/wk. **Prerequisites:** (MATH 2001 or 2901) and STAT 2903. **Assessment:** One 2hr exam, assignments.

Topics in STAT 3001 are treated at an Advanced level, with extensions.

STAT 3902 Linear Models (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** 2 lec, 1 tut & 1 computer lab/wk. **Prerequisites:** STAT 2004 and (STAT 2903 or Credit in 2003) and (MATH 2002 or 2902). **Assessment:** One 2hr exam, assignments, one 1hr computer practical exam.

Topics in STAT 3002 are treated at an Advanced level, with extensions.

STAT 3903 Time Series Analysis (Advanced)

4 credit points. **Session:** Semester 1. **Classes:** 2 lec, 1 computer class & 1 lec/tut/wk. **Prerequisites:** STAT2903 or Credit or better in STAT2003. **Assessment:** One 2hr exam, assignments.

The topics in STAT3003 are treated at an Advanced level along with an introduction to spectral analysis.

STAT 3904 Design of Experiments (Advanced)

4 credit points. **Session:** Semester 2. **Classes:** 2 lec, 1 computer class & 1 lec/tut/wk. **Prerequisites:** STAT 3902 or credit or better in STAT 3002. **Assessment:** One 2hr exam, assignments.

Topics in STAT 3004 are treated at an Advanced level, with extensions including response surfaces and cross-over designs.

STAT 3905 Markov Processes (Advanced)

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 2 tut/wk. **Prerequisites:** (STAT2901 or Credit in STAT2001) and MATH (1003 or 1903 or 1907). **Assessment:** One 2hr exam, assignments.

Topics in STAT3005 are treated at an Advanced level, with extensions.

STAT 3907 Multivariate Analysis (Advanced)

4 credit points. **Session:** Semester 2. **Classes:** 2 lec, 1 tut/wk. **Prerequisites:** STAT 3902 and either STAT (3001 or 3901). **Assessment:** One 2hr exam, assignments.

This unit of study studies the analysis of data on several variables measured simultaneously and multivariate distribution theory.

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.

3. Undergraduate tables and units of study

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

ENGL 1005 Language and Image

6 credit points. Mr. Ronalds. **Session:** Semester 2, Semester 1. **Classes:** One 1hr lecture and one 2hr workshop. **Assessment:** Two 500wd assignments, one 1500wd essay, one 1.5hr examination, and workshop participation.

NB: Department permission required for enrolment.

This unit of study will introduce student 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. Mr. Brennan. **Session:** Semester 2. **Classes:** one 2hr lecture, one 1hr tutorial. **Assessment:** One 1500wd essay(40%);one 600wd seminar paper(20%);one 2hr exam (40%).

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

Stuart Cunningham and Graeme Turner (eds), *The Media and Communications in Australia*, Allen and Unwin, Sydney, 2001.

It is recommended that students purchase a reader from the Copy Centre

MECO 1003 Principles of Media Writing

6 credit points. A/Prof Lumby. **Session:** Semester 1. **Classes:** One 2hr lecture, one 1hr tutorial. **Assessment:** One print media news article of 500wds (20%), one radio or television script for a two minute news item (20%), one print media feature article of 1200wds (20%), one two hour exam (30%), presentation/attendance (10%).

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

This unit will give students a grounding 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.

MECO 2001 Radio Broadcasting

8 credit points. Mr Evans. **Session:** Semester 1. **Classes:** One 2 hour lecture and one 2 hour workshop. **Prerequisites:** 12 junior credit points of Media & Communications units; ENGL 1050 or 1005 or LNSG1005. **Assessment:** One 2000 word essay, one production diary, radio script and final work, 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*, Oxford University Press. It is recommended that students purchase a reader from the Copy Centre

MECO 2003 Media Relations

8 credit points. Dr. Richard Stanton. **Session:** Semester 2. **Classes:** one 2hr lecture, one 1hr tutorial. **Prerequisites:** 12 junior credit points of Media & Communications units; ENGL 1050 or 1005 or LNSG1005. **Assessment:** 2500 words of practical assignments, one examination (2hrs).

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 media, the corporate sector, government and not for profit industries.

MECO 3001 Video Production

8 credit points. Dr. Anne Dunn. **Session:** Semester 2. **Classes:** One 2hr lecture, one 2hr workshop. **Prerequisites:** 12 junior credit points of MECO units; ENG1005 or ENGL1050 or LNS1005. **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 Reader, available from the University Copy Centre.

MECO 3002 Online Media Production

8 credit points. Ms Crawford. **Session:** Semester 1. **Classes:** one 1hr lecture, one 2hr tutorial. **Prerequisites:** MECO3001. **Assessment:** One web site worth 45%; one production log (10%); 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

Gauntlett, David, *Web.Studies: Rewiring media studies for the digital age*, London: Arnold, 2nd ed, 2004, pp.250, ISBN 0340814721

It is recommended that students purchase a reader from the Copy Centre

MECO 3003 Media, Law and Ethics

8 credit points. A/Prof. Lumby. **Session:** Semester 2. **Classes:** one 2hr lecture, one 1hr tutorial. **Prerequisites:** 12 junior credit points of MECO units; ENGL1005 or ENGL1050 or LNSG1005. **Assessment:** One 800wd court report for original research (30%), 1500 wd tutorial paper (30%), 2 hr exam (30%), participation & attendance (10%).

NB: Available to BA(Media and Commun) and BSc (Media & Commun) students only.

MECO3003 will introduce students to key legal and ethical 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 the structure of Australia's legal system and to those aspects of the law that impinge on the work of media professionals.

Textbooks

Remote Control: *New Media, New Ethics*, Cambridge University Press, Melbourne 2003

Pearson, Mark (2004) *The Journalist's Guide to Media Law*, Allen and Unwin

MECO 3005 Media Globalisation

8 credit points. Mr. Brennan. **Session:** Semester 1. **Classes:** one 2hr lecture, one 1hr tutorial. **Prerequisites:** 12 junior credit points of MECO units; ENG1005 or ENGL1050 or LNSG1005. **Assessment:** Book Review 20%; Presentation 25% Tutorial attendance and participation 10%; Essay 45%.

NB: NB: Available to BA (Media & Communication) and BSc (Media & Comm) students only

This unit develops students' understanding of key issues and debates in Australia relation to the concept of globalisation and a global media.

MECO 3701 Media and Communications Internship

8 credit points. Ms Blue. **Session:** Semester 1, Semester 2. **Prerequisites:** MECO3002 and MECO 3003. **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 is assessed on a satisfactory/un-satisfactory 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 organization, assisted and supervised by both the workplace and the department. Placements may include print, broadcast and online media, public relations and advertising organizations.

MECO 3702 Internship Project

8 credit points. Ms Blue. **Session:** Semester 1, Semester 2. **Prerequisites:** MECO3002 & MECO3003. **Corequisites:** MECO3701. **Assessment:** Students will be required to submit a professional journal regarding their internship, including a critical reflection on their experience (2000 words) 30%; 4000 word research essay 70%. 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.

NB: Available to BA(Media and Commun) and BSc (Media & Communications) students only.

Students will be required to present a journal recounting their experiences during the internship and, consultation with a supervisor, will formulate a topic for their 5000 word research essay.

Textbooks

Stokes, Jane (2002) *How to do Media and Cultural Studies*, London: Sage

Medical Science units of study

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. A/Prof. Robin Allan. **Session:** Semester 1. **Classes:** 2 lec; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **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. Prof Richard Christopherson. **Session:** Semester 1. **Classes:** 2 lec; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **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. Dr I Schneider. **Session:** Semester 1. **Classes:** 2 lec; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **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. Dr Margot Day. **Session:** Semester 1. **Classes:** 2 lec; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **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. Françoise Janod-Groves. **Session:** Semester 2. **Classes:** 2 lec; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **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. Dr Richard Ward. **Session:** Semester 2. **Classes:** 2 lec; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **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

3. Undergraduate tables and units of study

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. Helen Agus. **Session:** Semester 2. **Classes:** 2 lec; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **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. Dr H Briscoe. **Session:** Semester 2. **Classes:** 2 lec; 5 tut or prac every 2 weeks. **Prerequisites:** 42 credit points of Junior Bachelor of Medical Science units of study. **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, 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. Students will use techniques ranging from simple histology to molecular biology in these investigations. Also included are tutorial sessions in which hospital microbiologists guide students through 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 where the unit begins with a BMED code, and under the relevant department

headings in this chapter where the units are offered by other Schools/Departments in the faculty.

BMED 3003 Immunology

12 credit points. Dr Helen Briscoe. **Session:** Semester 2. **Classes:** 3 lec, 1 tut & 8 prac/wk. **Prerequisites:** 32 credit points of Intermediate BMED units including BMED 2506. **Assessment:** Exam, essays, prac.

This unit of study will be taught by the Immunology Unit of the Department of Medicine, with contributions from the Centenary Institute of Cancer Medicine and Cell Biology and other invited experts in the discipline. The unit will provide a comprehensive understanding of the components of the immune system at the molecular and cellular levels; the mechanisms of pathological immune processes; immune system dysfunction; and, immunological techniques used in clinical diagnostic and research laboratories.

BMED 3004 Infectious Diseases

12 credit points. A/Prof C Harbour. **Session:** Semester 2. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** 32 credit points of Intermediate BMED units including BMED 2506. **Assessment:** Essays, tutorials, seminars, practical assessment and theory exam.

This unit of study is taught by the Department of Infectious Diseases, Faculty of Medicine, which is located on the 6th floor of the Blackburn building (Ph: 9351 2412). A major aim of the unit is to study the interactions between infectious agents and their human hosts in order to understand how infectious disease occurs.

The rationale for this approach is that the elucidation and understanding of the mechanisms by which infectious agents cause disease should lead to the development of more rational control strategies. Knowledge of the causes of the most important infectious diseases is acquired by studying case histories in extended tutorial/demonstration sessions, lectures and self-directed learning. The lecture series also covers other topics including mechanisms of pathogenesis, replication strategies, epidemiology, and infection control procedures. Practical sessions are designed to maintain and improve the technical skills appropriate for the handling of infectious agents that you acquired in the core units. Theme sessions are used to demonstrate and explain the conceptual framework underpinning the most important practical procedures used in ID today.

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. In particular students may not enrol in any of the following subjects:

Anatomy and Histology

- ANAT 2008 Principles of Histology
- ANAT 2009 Comparative Primate Anatomy
- ANAT 2010 Concepts in Neuroanatomy

Biochemistry

- BCHM 2002 Molecules, Metabolism and Cells
- BCHM 2102 Molecules, Metabolism and Cells Theory
- BCHM 2072 Human Biochemistry
- BCHM 2972 Human Biochemistry (Advanced)

Biological Sciences

- BIOL 2016 Cell Biology
- BIOL 2916 Cell Biology (Advanced)

Immunology

- IMMU 2101 Introductory Immunology

Microbiology

- MICR 2021 Introductory Microbiology
- MICR 2921 Introductory Microbiology (Advanced)
- MICR 2022 Applied Microbiology
- MICR 2922 Applied Microbiology (Advanced)
- MICR 2024 Microbes in the Environment

Molecular Biology and Genetics

- MBLG 2001 Molecular Biology and Genetics A
- MBLG 2101 Molecular Biology and Genetics A (Theory)
- MBLG 2771 Molecular Biology and Genetics A
- MBLG 2871 Molecular Biology and Genetics A (Adv)
- MBLG 2072 Molecular Biology and Genetics B
- MBLG 2972 Molecular Biology and Genetics B (Adv)

Pharmacology

- PCOL 2011 Pharmacology Fundamentals
- PCOL 2012 Intro Pharmacology: Drugs and People

Physiology

- PHSI 2005 Integrated Physiology A
- PHSI 2905 Integrated Physiology A (Advanced)
- PHSI 2006 Integrated Physiology B
- PHSI 2906 Integrated Physiology B (Advanced)

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.

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 pre-requisites 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. Dr Peter New. **Session:** Semester 1. **Classes:** 2.5 lec, 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. **Assessment:** One 2hr exam, continuous assessment in prac, 2 assignments, prac exam.

NB: For progression on to Senior Microbiology units, students must also complete MBLG1001 and MICR (2022 or 2922)

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, 2004

MICR 2022 Applied Microbiology

6 credit points. Dr Peter New. **Session:** Semester 2. **Classes:** 2.5 lec, 0.5 tut or prac & 2.0 prac/wk. **Prerequisites:** MICR (2021 or 2921 or 2001 or 2901) except for students taking MICR2024. **Assessment:** One 2hr exam, continuous assessment in prac, 2 assignments, prac exam.

NB: For progression on to Senior Microbiology units, students must also complete MBLG1001

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 covers aspects of microbial genetics, the structure and functioning of procaryotic cells and aspects of microbial taxonomy and microbial evolution.

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, biodegradation and bioremediation.

Practical classes enable the study of material which both complements and supplements the lecture topics.

Work experience

On completion of MICR 2022 students will be offered the opportunity to undertake work experience for approximately one month in a microbiology laboratory of choice (hospital, food, research, environmental etc).

Textbooks

Prescott L M et al. Microbiology. 6th edn, WCB/McGraw-Hill, 2004

MICR 2024 Microbes in the Environment

6 credit points. Dr Andrew Holmes. **Session:** Semester 2. **Classes:** 2 lectures and 3 prac/week. **Prerequisites:** 30 credit points of junior Science or Faculty of Food, Agriculture and Natural Resource units including 6 credit points of Junior Biology. **Assessment:** One 2hr exam, weekly on-line quiz, project report and seminar.

3. Undergraduate tables and units of study

NB: For progression on to Senior Microbiology units, students must also complete MBLG1001 and MICR2022.

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. Dr Peter New. **Session:** Semester 1. **Classes:** 2.5 lec, 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. **Assessment:** One 2hr exam, continuous assessment in prac, 2 assignments, prac exam.

NB: For progression on to Senior Microbiology units, students must also complete MBLG1001 and MICR (2022 or 2922)

This unit of study is based on MICR2021 with approximately nine 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. Dr Peter New. **Session:** Semester 2. **Classes:** 2.5 lec, 0.5 tut or prac & 2.0 prac/wk. **Prerequisites:** Distinction in MICR (2021 or 2921 or 2001 or 2901 or 2024). **Assessment:** One 2hr exam, continuous assessment in prac, 2 assignments, prac exam.

NB: For progression on to Senior Microbiology units, students must also complete MBLG1001

This unit of study is based on MICR2022 with approximately nine 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 3001 General and Medical Microbiology

12 credit points. Mrs Helen Agus. **Session:** Semester 1. **Classes:** 3 lec, 8 prac/wk. **Prerequisites:** MBLG (2001 or 2101 or 2901) and [12 credit points of Intermediate MICR units or MICR (2011 and 2012) or MICR 2909]. For BMedSc students: 32 credit points of Intermediate BMED units including BMED 2506. **Assessment:** One 2hr exam and one 1hr exam, essay, prac.

NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) and MBLG (1001 or 2001 or 2901 or 2771 or 2871).

General Microbiology includes three themes: 1. Microscopy: factors controlling image quality in the light microscope, optical aberrations, objectives and the visualisation of transparent phase objects; 2.

Bacterial growth and metabolism: how bacteria grow under different environmental constraints, growth rate and nutrient uptake, aerobic and anaerobic growth, and growth under stress; 3. Microbial ecology: the expansion of microbial ecology resulting from recent advances in molecular biology, the ecological view of disease. Medical Microbiology is divided into three themes: 1. Infections of body systems: bacterial and viral 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.

MICR 3002 Molecular/Environmental Microbiology

12 credit points. Dr Tom Ferenci and Dr Dee Carter. **Session:** Semester 2. **Classes:** 3 lec, 8 prac/wk. **Prerequisites:** 12 credit points of Intermediate Microbiology and MBLG (2101 or 2001 or 2901). **Assessment:** One 2hr exam and one 1hr exam, prac.

NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) and MBLG (1001 or 2001 or 2901 or 2771 or 2871).

This unit of study extends some of the topics covered in MICR 2001 and 2002. Molecular Microbiology covers aspects of bacterial structure and physiology and principles of molecular pathogenicity. Lectures on bacterial structure and physiology include structural aspects of surface components, membranes, periplasm and peptidoglycan, and a discussion of drug resistance mechanisms. Principles of Molecular Pathogenicity covers clones in pathogenic species, modes of pathogenesis and adhesion, bacterial toxins, antigenic variation, and vaccines. Environmental Microbiology includes plant microbiology, particularly in relation to nitrogen fixation systems, Agrobacterium and crown gall, root colonisation, and endophytes.

The unit of study also covers aspects of the distribution and activities of microbes in terrestrial and aquatic ecosystems, including their roles in the biodegradation and bioremediation of organic pollutants. The practical component is designed to enhance students' practical skills and to complement the lecture series. Project work may form part of the practical component subject to the availability of resources.

MICR 3901 General and Medical Microbiology (Adv)

12 credit points. Mrs Helen Agus. **Session:** Semester 1. **Classes:** 4 lec, 8 prac/wk.

Prerequisites: MBLG (2101 or 2001 or 2901) and [12 credit point of Intermediate MICR units including one Distinction, or MICR (2011 and 2012) including one Distinction, or Distinction in MICR 2909. For BMedSc: 32 credit points of Intermediate BMED units including Distinction in BMED 2506. **Assessment:** Two 2hr exams and one 1hr exam, essay, prac.

NB: From 2006 the prerequisites will be: MICR (2021 or 2921 or 2001 or 2901 or 2024) and MICR (2022 or 2922 or 2002 or 2902), including 6 credit points at Distinction level and MBLG (1001 or 2001 or 2901 or 2771 or 2871).

This unit of study is available to students who have performed well in MICR (2001 or 2901, and 2002, 2004 or 2902) and is based on MICR3001 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. The selection criteria for entry into the unit of study will be available from the coordinator at the time of enrolment.

MICR 3902 Molecular/Environmental Microbiology Adv

12 credit points. Dr Tom Ferenci and Dr Dee Carter. **Session:** Semester 2. **Classes:** 4 lec, 8 prac/wk. **Prerequisites:** 12 credit points of Intermediate Microbiology including one Distinction, and MBLG (2101 or 2001 or 2901). **Assessment:** Two 2hr exams and one 1.5hr exam, essay, prac.

NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) at Distinction level and MBLG (1001 or 2001 or 2901 or 2771 or 2871).

This unit of study is available to students who have performed well in MICR (2001 or 2901, and 2002, 2004 or 2902) and is based on MICR 3002 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. The selection criteria for entry into the unit of study will be available from the coordinator at the time of enrolment.

MICR 3003 Molecular Biology of Pathogens

12 credit points. Dr Tom Ferenci and Dr Dee Carter. **Session:** Semester 2. **Classes:** 3 lec, 8 prac/wk. **Prerequisites:** 32 credit points of Intermediate BMED units including BMED 2506. **Assessment:** One 2hr exam, and one 1hr exam, practical.

NB: It is strongly recommended that students also enrol in MICR 3001.

This unit of study is designed to provide an understanding of microbial disease at the molecular level. The following topics will be covered: introductory bacterial genetics; pathogenic processes and the molecular basis of pathogenicity in bacteria; structure and function of micro-organisms and action of antibiotics and chemotherapeutic agents; and pathogenic processes in fungi and viruses.

MICR 3903 Molecular Biology of Pathogens Advanced

12 credit points. Dr Tom Ferenci and Dr Dee Carter. **Session:** Semester 2. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** 32 credit points of Intermediate BMED units including Distinction or better in BMED 2506. **Assessment:** Two 2hr exams and one 1hr exam, practical.

NB: It is strongly recommended that students also enrol in MICR 3001.

Same details as MICR 3003, with advanced components

MICR 3004 Molecular Biology of Pathogens Molecular

12 credit points. Dr Tom Ferenci and Dr Dee Carter. **Session:** Semester 2. **Classes:** 3 lec, 8 prac/wk and 4 discussion sessions. **Prerequisites:** MICR 2909. **Assessment:** One 2hr exam and one 1hr theory exam, practical and an essay based on discussion sessions.

NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) and MBLG (2071 or 2971 or 2001 or 2901 or 2771 or 2871)

This unit of study is the same as that in MICR 3003, except for the addition of 4 special molecular biology and genetics discussion sessions, which consist of topical seminars and discussions in this discipline. An essay based on these discussions is included as part of the assessment of the unit of study.

MICR 3904 Molecular Biology of Pathogens Mol (Adv)

12 credit points. Dr Tom Ferenci and Dr Dee Carter. **Session:** Semester 2. **Classes:** 4 lec & 8hrs prac/wk and 4 discussion sessions. **Prerequisites:** Distinction in MICR 2909. **Assessment:** Two 2hr exams and one 1hr theory exam, practical, and an essay based on discussion sessions.

NB: From 2006 the prerequisites will be: MICR (2022 or 2922 or 2002 or 2902) at Distinction level and MBLG (2071 or 2971 or 2001 or 2901 or 2771 or 2871)

Same details as MICR 3004, with advanced components.

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 re-

search 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) **Molecular Biology and Genetics**

Molecular Biology and Genetics units of study in second year will be taught by staff from the School of Molecular and Microbial Biosciences and the School of Biological Sciences. The first semester units, MBLG 2771/2871 and BCHM2071/2971 are coordinated by the School of Molecular and Microbial Biosciences while the second semester units, MBLG 2072/2972 and BCHM2072/2972 are coordinated by the School of Biological Sciences.

MBLG 1001 Molecular Biology and Genetics (Intro)

6 credit points. Dr Dale Hancock. **Session:** Semester 2. **Classes:** 2 lec/wk, 5 h prac each alternate wk. **Assumed Knowledge:** 6 credit points of Junior Biology and 6 cp of Junior Chemistry. **Assessment:** One 2h theory exam, one 1h theory of practical exam, in-semester skills test, practical report and two assignments.

The lectures in this Unit of Study introduce the "Central Dogma" of molecular biology and genetics - i.e., the molecular basis of life. In the beginning, students are introduced to the information-containing macromolecules (protein and nucleic acids) and this is followed by a review of how the structure of proteins allows them to fulfil their biological role as structural and catalytic molecules, and how the sequence of DNA is used to encode genetic information. The packaging of DNA into chromosomes, the replication of DNA and the repair of damaged DNA are then covered. A description of the process of reading the information in DNA (translation to RNA) and the control of the expression of genetic information is then presented. This leads on to discussion of translation (the formation of proteins). The unit concludes with an introduction into the techniques of molecular biology and, in particular, how bacteria and restriction enzymes have allowed an explosion of interest and research endeavour 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 specialised 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. Students perform practical sessions in small groups and so teamwork and problem solving form an integral part of each activity. In addition to generic skills, students will learn important laboratory/technical abilities with an emphasis on equipment used in modern molecular biology research.

Textbooks

Malacinski, G M & Freifelder, D The Essentials of Molecular Biology (4th edition, Jones and Bartlett, 2003)

MBLG 2001 Molecular Biology and Genetics A

8 credit points. A/Prof Whitelaw, Dr Hancock. **Session:** Summer. **Classes:** 3 lec & 5 prac/wk & voluntary tutorials. **Prerequisites:** 12 credit points of Junior Chemistry and BIOL (1001 or 1101 or 1901) except for students co-enrolled in BCHM 2011, or with permission of the Unit Co-ordinator. For Combined BAppSc(Exercise and Sport Science)/BSc(Nutrition) degree the completion of all Junior units listed in Table IF. **Assessment:** One 2hr exam, one 2hr theory of prac exam, prac tasks.

The lectures in this unit of study introduce the main principles of molecular biology and genetics i.e. the molecular basis of life. In the beginning, the students are introduced to the information macromolecules in living cells: DNA, RNA and protein. This is followed by a review of how DNA is organised into chromosomes and genes and this leads on to discussion of gene expression and replication. The unit of study then moves on to discuss how the amino acid sequence of proteins determines the diverse array of protein functions. The unit covers modern molecular biology techniques: plasmids, transposons, bacteriophage and restriction enzymes and the techniques used to manipulate genetic information; gene libraries, DNA sequencing and the polymerase chain reaction.

Textbooks

Resource Manual for MBLG 2001 Practical Sessions, Sem 1.

MBLG 2101 Molecular Biology & Genetics A (Theory)

4 credit points. A/Prof Whitelaw, Dr Hancock. **Session:** Summer. **Classes:** 3 lec wk. **Prerequisites:** 12 credit points of Junior Chemistry and BIOL (1001 or 1101 or 1901). **Assessment:** One 3 hr theory exam.

This unit of study is comprised of the lecture component of MBLG 2001.

MBLG 2771 Molecular Biology and Genetics A

6 credit points. A/Prof Merlin Crossley. **Session:** Semester 1. **Classes:** 2 lec/wk, 1 tut/fortnight, 4hr prac/fortnight. **Prerequisites:** BIOL (1001 or 1101 or 1901) except for students co-enrolled in BCHM 2071/2971 and 12 credit points of Junior Chemistry. For Combined BAppSc (Exercise and Sport Science)/BSc(Nutrition) degree the completion of all Junior units listed in Table IF. **Assessment:** One 2hr theory exam, a 1hr theory of practical exam, 2 prac reports and 5hrs of class based practical skills testing. The lectures in this unit of study introduce the main principles of molecular biology and genetics - ie, the molecular basis of life. In the beginning, the students are introduced to the information macromolecules in living cells: DNA, RNA and protein. This is followed by a review of how DNA is organised into chromosomes and genes and this leads on to discussion of gene expression and replication. During the unit of study, students will acquire a wide range of generic skills; including computing skills, communication and articulation skills (written and oral), criticism and data analysis/ evaluation skills, experimental design and hypothesis testing skills. Students perform practical sessions in small groups and, therefore, problem solving and team work form an integral part of each activity. In addition to the generic skills, students will learn important laboratory/technical abilities with an emphasis on the equipment used in molecular biology and genetics research.

Textbooks

Watson, J. et al. Molecular Biology of the Gene (5th edition, Pearson, 2004)

MBLG 2871 Molecular Biology and Genetics A (Adv)

6 credit points. A/Prof Merlin Crossley. **Session:** Semester 1. **Classes:** 2 lec/wk, 1 tut/fortnight, 4hr prac/fortnight. **Prerequisites:** BIOL (1001,1101 or 1901) except for students co-enrolled in BCHM 2071/2971 and 12 credit points of Junior Chemistry. For Combined BAppSc(Exercise and Sport Science)/BSc(Nutrition) degree the completion of all Junior units listed in Table IF. Also required is a Distinction or better in two of the prerequisite units of study. **Assessment:** One 2hr theory exam, a 1hr theory of practical exam, 2 prac reports and 5hrs of class based practical skills testing.

NB: The completion of 6 credit points of MBLG units of study is highly recommended. 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 Gene (5th edition, Pearson, 2004)

MBLG 2072 Molecular Biology and Genetics B

6 credit points. **Session:** Semester 2. **Classes:** 2/3 lectures alternate weeks (av 2.5 hrs). 2-4 hours prac per week (av 2.5 hrs). One tutorial every second week included in prac timetable. **Assumed Knowledge:** One of MBLG2771, MBLG2001, MBLG2871, MBLG2901. **Prerequisites:** 12 credit points of Junior Chemistry and BIOL (1001 or 1101 or 1901). **Assessment:** One 2 hr exam (50%), laboratory reports (30%), quizzes (20%).

This unit of study builds on the concepts introduced in MBLG2771 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, bioinformatics and the techniques and applications of molecular genetics. The way in which modern molecular techniques have increased our knowledge in the field of developmental biology will be examined in lectures on the developmental genetics of plants animals and insects 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.

Textbooks

Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C., Gelbart, W.M., Suzuki, D.T. and Miller, J.H. (2004) Introduction to Genetic Analysis. 8th ed. Freeman.

MBLG 2972 Molecular Biology and Genetics B (Adv)

6 credit points. **Session:** Semester 2. **Classes:** 2/3 lectures alternate weeks (av 2.5 hrs). 2-4 hours prac per week (av 2.5 hrs). One tutorial every second week included in prac timetable. **Prerequisites:** Distinction in one of MBLG2771, MBLG2001, MBLG2871, MBLG2901. **Assessment:** One 2 hr exam (50%), laboratory reports (30%), quizzes (20%).

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. This is a core Intermediate unit of study in the B.Sc. (Molecular Biology and Genetics) award course. See prerequisites for Senior units of study in Biology.

Textbooks

Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C., Gelbart, W.M., Suzuki, D.T. and Miller, J.H. (2004) Introduction to Genetic Analysis. 8th ed. Freeman.

Molecular Biotechnology

3. Undergraduate tables and units of study

MOBT 2102 Molecular Biotechnology 2

6 credit points. Dr Rachel Codd. **Session:** Semester 2. **Classes:** 3 lec & 1 tut/wk. **Prerequisites:** 12 credit points of Junior Biology and 12 credit points of Junior Chemistry. **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 MBLG1001 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 3102 Molecular Biotechnology 3B

6 credit points. Dr Kevin Downard. **Session:** Semester 2. **Classes:** 2 lec, 1 tut/wk & 25 hrs industry related project over the semester. **Prerequisites:** For 2005 entry: MOBT2002 From 2006: MOBT3101. **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)

'Neuroscience' is an interdisciplinary major within the BSc which cuts across boundaries between traditional subject areas. As reflected in the structure of the program, it ranges from concern with processes within nerve cells at the molecular level to complex phenomena such as perception and emotion; from the regulation of breathing and blood pressure through movement, to our ability to learn, remember and think. Students wishing to major in Neuroscience can take various combinations of units of study, mainly ones offered by the Departments of Anatomy, Pharmacology, Physiology and Psychology.

Refer to Table I for an enrolment guide and to entries under the contributing departments for unit of study descriptions. Please note that this major requires certain combinations of units of study in the Junior and Intermediate years, as well as the Senior year.

There is no equivalent Honours program but students who take appropriate additional units of study may be eligible for entry into the Honours programs offered by the Departments of Anatomy, Pharmacology, Physiology and Psychology. These Honours programs require the equivalent of a further year of full time study.

Nutrition

NUTR 2911 Food Science Introductory (Advanced)

6 credit points. Dr Kim Bell-Anderson. **Session:** Semester 1. **Classes:** 2 lectures, 3 prac/wk. **Prerequisites:** CHEM (1101 or 1901 or 1903 or 1909) and CHEM (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. **Corequisites:** MBLG2771 (or MBLG2871), PHSI2005. **Assessment:** One 3hr exam, one assignment, five prac reports.

NB: From 2006 the prerequisites will be MBLG 1001 and CHEM (1101 or 1901 or 1903 or 1909) and CHEM (1102 or 1902 or 1904 or 1908) and BIOL (1001 or 1901) and BIOL (1002 or 1003 or 1902 or 1903).

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

Griswold N. The Experimental Study of Foods.

NUTR 2912 Nutritional Science Introductory (Adv)

6 credit points. Dr Kim Bell-Anderson. **Session:** Semester 2. **Classes:** 2 lectures, 3 prac/wk. **Assumed Knowledge:** NUTR2911. **Prerequisites:** CHEM (1101 or 1901 or 1903 or 1909) and CHEM (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. **Corequisites:** BCHM2072 (or BCHM2972) and PHSI2006. **Assessment:** One 3hr exam, one assignment, five prac reports.

NB: From 2006 the prerequisites will include MBLG1001

Vitamins: Consumption patterns, requirements for health, absorption, metabolism, nutritional/disease significance, deficiency state in regard to Vitamins A, B1, 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 3901 Nutrition in Individuals (Advanced)

12 credit points. Ms Sue Amanatidis. **Session:** Semester 1. **Classes:** 4 lec & 8 hr prac/wk. **Prerequisites:** NUTR 2902. **Assessment:** One 3 hr exam (50%), practical project (50%).

Dietary intake assessment: 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; computerised nutrient analysis; Atwater conversion factors; 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 measurements; percent body fat; reference standards; growth standards and percentiles

Nutritional metabolism: biochemical interrelationships between nutrients and the supply of energy to the body; effects of nutritional state on energy metabolism

Nutritional epidemiology: basic concepts, advantages and limitations of epidemiological methods; biological markers of chronic diseases; use of biostatistical tools in epidemiology; critical interpretation of published data. Research design and statistics.

Textbooks

Cameron ME, Van Staveren WA eds. Manual on Methodology for Food Consumption Studies. Oxford: Oxford University Press, 1988.

Willett W. Nutritional Epidemiology. Oxford: Oxford University Press, 1990.

Gibson RS. Nutritional Assessment: A Laboratory Manual. Oxford: Oxford University Press, 1993.

NUTR 3902 Nutrition in Populations (Advanced)

12 credit points. Ms Sue Amanatidis. **Session:** Semester 2. **Classes:** 4 lec & 8 hr prac/wk. **Prerequisites:** NUTR2902. **Assessment:** One 3 hr exam (50%), practical project (50%).

Nutrition through the lifecycle; Food Habits: theories of food habits; Nutritional problems in contemporary communities and selected target groups; Nutritional health and chronic disease; Food and nutrition policies and guidelines: dietary guidelines; Food and Nutrition Systems; Principles of Public Health nutrition; Public Health Nutrition Strategies and programs; Principles of Nutrition Education. Nutrition controversies: fad diets and alternative practitioners.

Nutrition Honours

A/Prof S Samman; Ms Merryl Ireland; A/Prof M Crossley

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 dietitian 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. 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. **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 of MBLG 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 stu-

3. Undergraduate tables and units of study

dents 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,

LE Limbird, 2001.

Patrick GL, An Introduction to Medicinal Chemistry 2nd edn, Oxford Uni press, 2001.

PCOL 2012 Pharmacology: Drugs and People

6 credit points. Dr Jonathon Arnold. **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. **Assessment:** One 2 hr exam, four 20 question WebMCQ quizzes, three lab reports.

NB: The completion of 6 credit points of MBLG 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,

LE Limbird, 2001.

PCOL 3001 Molecular Pharmacology and Toxicology

12 credit points. A/Prof Ian Spence. **Session:** Semester 1. **Classes:** 4 lec, 2 tut & 6 prac/wk. **Prerequisites:** PCOL 2001 and PCOL (2002 or 2003); or 32 credit points from Intermediate BMED units of study. **Assessment:** Two 2hr exams, classwork.

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

This unit of study covers two major areas of pharmacology: (1) toxicology, and (2) drug design and development. The toxicology area covers metabolism of toxic substances, toxicity to major organs, epidemiology and carcinogenesis. It aims to provide an overview of toxicology with detailed examination of selected issues. Drug design and development looks at the principles guiding the development of new therapeutic agents, for example new histamine antagonists, and the use of new methods to study drug distribution and action such as positron emission tomography (PET) and single photon emission computerised tomography (SPECT) scanning.

Textbooks

Department of Pharmacology PCOL 3001:Toxicology Readings.

Patrick GL. An Introduction to Medicinal Chemistry 2nd edn Oxford Uni Press, 2001

Reference books

Hardman JG and Limbird LE (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 10th edn, McGraw-Hill, 2001

Klaassen CD. Casarett & Doull's Toxicology: The Basic Science of Poisons New York : McGraw-Hill, Health Professions Division, 5th edn 1996

Krogsgaard-Larsen P et al (eds). A Textbook of Drug Design and Development. 2nd edn. Harwood Academic Publishers, 1996

PCOL 3002 Neuro- and Cardiovascular Pharmacology

12 credit points. Prof G Johnston. **Session:** Semester 2. **Classes:** 4 lec, 2 tut & 6 prac/wk. **Prerequisites:** PCOL 2001 and PCOL (2002 or 2003); or 32 credit points from Intermediate BMED units of study. **Assessment:** Two 3hr exams, classwork.

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

The lecture series provides a comprehensive, systematic study of three major areas of pharmacology: (1) neuropharmacology, (2) cardiovascular pharmacology, and (3) respiratory pharmacology. The neuropharmacology component examines the actions of psychoactive drugs at all levels from single cells through to behaviour. The

cardiovascular and respiratory components examine therapeutic intervention in disease states such as hypertension and asthma, and the mechanisms of drug action. As part of the unit of study all students prepare a drug profile - a document similar to that required by regulatory authorities when a new drug is introduced. This provides students with the opportunity to become familiar with, firstly, regulatory procedures and, secondly, with the detailed pharmacology of one particular compound. In addition to the core component students choose an elective selected from a number offered by the Department. These cover specific topics in depth and some are laboratory based. Details of these are available from the Department before the commencement of the July semester.

Textbooks

Rang HP, Dale MM & Ritter JM. Pharmacology 5th edn, Churchill Livingstone, 2003

Study aids

Neal MJ. Medical Pharmacology at a Glance 4th edn, Blackwell Science, 2002

Reference books

Cooper JR, Bloom FE & Roth RHL. The Biochemical Basis of Neuropharmacology 7th edn, Oxford, 1996

Hardman JG and Limbird LE (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 10th edn, McGraw-Hill, 2001

PCOL 3901 Molecular Pharmacology & Toxicology Adv

12 credit points. A/Prof Ian Spence. **Session:** Semester 1. **Classes:** 4 lec, 2 tut & 6 prac/wk. **Prerequisites:** Distinction average in PCOL 2001 and PCOL (2002 or 2003); or in 32 credit points from Intermediate BMED units of study. **Assessment:** Two 2hr exams, classwork.

NB: Department permission required for enrolment. The completion of 6 credit points of MBLG units of study is highly recommended. Entry to this unit requires Departmental permission.

This unit will consist of the lecture and practical components of PCOL 3001. Students selected for PCOL 3901 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

Department of Pharmacology PCOL 3901:Toxicology Readings.

Patrick GL. An Introduction to Medicinal Chemistry. 2nd edn Oxford Uni Press, 2001

Reference books

Hardman JG and Limbird LE (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 10th edn, McGraw-Hill, 2001

Klaassen CD. Casarett & Doull's Toxicology: The Basic Science of Poisons. New York : McGraw-Hill, Health Professions Division, 5th edn 1996

Krogsgaard-Larsen P et al (eds). A Textbook of Drug Design and Development. 2nd edn. Harwood Academic Publishers, 1996

PCOL 3902 Neuro & Cardiovascular Pharmacology Adv

12 credit points. Prof G Johnston. **Session:** Semester 2. **Classes:** 4 lec, 2 tut & 6 prac/wk. **Prerequisites:** Distinction average in PCOL2001 and PCOL (2002 or 2003); or in 32 credit points from Intermediate BMED units of study. **Assessment:** Two 2hr exams, classwork.

NB: Department permission required for enrolment. The completion of 6 credit points of MBLG units of study is highly recommended. Entry to this unit requires Departmental permission.

Advanced students will complete the same core lecture material as students in PCOL 3002 but carry out advanced level elective projects, practicals and tutorials. They will sit the same written examinations as students in PCOL 3002, while the elective projects, practicals and tutorials will be assessed separately.

Textbooks

Rang HP, Dale MM & Ritter JM. Pharmacology. 5th edn, Churchill Livingstone, 2003

Study aids

Neal MJ. Medical Pharmacology at a Glance. 4th edn, Blackwell Science, 2002

Reference books

Cooper JR, Bloom FE & Roth RH. The Biochemical Basis of Neuropharmacology. 7th edn, Oxford, 1996

Hardman JG and Limbird LE (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 10th edn, McGraw-Hill, 2001

Pharmacology Honours

Associate Professor R Allan

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 Department. 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. 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 Web site at www.physics.usyd.edu.au

PHYS 1001 Physics 1 (Regular)

6 credit points. **Session:** Semester 1. **Classes:** Three 1hr lectures, one 3hr laboratory, one 1hr tutorial. **AssumedKnowledge:** HSC Physics. **Corequisites:** Recommended: MATH (1001/1901, 1002/1902, 1003/1903, 1005/1905). **Assessment:** Laboratory (20%), assignments (5%), progressive test (5%), skills test (5%), examination (65%). 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. **Session:** Semester 1. **Classes:** Three 1hr lectures, one 3hr laboratory, one 1hr tutorial. **AssumedKnowledge:** No assumed knowledge of Physics. **Corequisites:** Recommended: MATH (1001/1901, 1002/1902, 1003/1903, 1005/1905). **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 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. **Session:** Semester 2. **Classes:** Three 1hr lectures, one 3hr laboratory, one 1hr tutorial. **AssumedKnowledge:** HSC Physics or PHYS (1001 or 1002 or 1901) or equivalent. **Corequisites:** Recommended: MATH (1001/1901, 1002/1902, 1003/1903). MATH 1005/1905 would also be useful. **Assessment:** Laboratory (25%), assignments (5%), examination (70%).

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. It is recommended that PHYS (1001 or 1002 or 1901) be completed before this unit.

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. **Session:** Semester 2. **Classes:** Three 1hr lectures, one 3hr laboratory, one 1hr tutorial. **AssumedKnowledge:** HSC Physics or PHYS (1001 or 1002 or 1901) or equivalent. **Corequisites:** Recommended: MATH (1001/1901, 1002/1902, 1003/1903). MATH 1005/1905 would also be useful. **Assessment:** Laboratory (25%), assignments (5%), examination (70%).

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. **Session:** Semester 2. **Classes:** Three 1hr lectures, one 2hr laboratory, one 1hr tutorial. **AssumedKnowledge:** 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, super-

3. Undergraduate tables and units of study

novas, 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. 8th edition, Brooks/Cole 2002–

Astronomy Computer Exercises available from the Copy Centre.

PHYS 1901 Physics 1A (Advanced)

6 credit points. **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 PHYS1902, or Distinction or better in PHYS (1003 or 1004) or an equivalent unit.

Corequisites: Recommended: MATH (1001/1901,1002/1902, 1003/1903). MATH 1005/1905 would also be useful. **Assessment:** Laboratory (20%), assignments (5%), progressive test (5%), skills test (5%), examination (65%).

Physics 1901 (Advanced) A is intended for students who have a strong background in Physics and an interest in studying more advanced topics. It proceeds faster than Physics 1001 (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 1B (Advanced)

6 credit points. **Session:** Semester 2. **Classes:** Three 1hr lectures, one 3hr laboratory, one 1hr tutorial. **Prerequisites:** UAI of at least 96, or HSC Physics result in Band 6, or PHYS1901, or Distinction or better in PHYS (1001 or 1002) or an equivalent unit.

Corequisites: Recommended: MATH (1001/1901,1002/1902, 1003/1903). MATH 1005/1905 would also be useful. **Assessment:** Laboratory (25%), assignments (5%), examination (70%).

This unit of study is a continuation of Physics 1901 (Advanced) A. Students who have completed Physics 1001 (Regular) or Physics 1002 (Fundamentals) at Distinction level may enrol. It proceeds faster than Physics 1003 (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 PHYS2013/2913 as well.

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 Web site at www.physics.usyd.edu.au and also on WebCT.

PHYS 2011 Physics 2A

6 credit points. **Session:** Semester 1. **Classes:** 2 lec x 11 wks, 2 hr computational lab x 9 wks, 3 hr lab x 9 wks. **AssumedKnowledge:** 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). **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 completes 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 and Particle 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. **Session:** Semester 2. **Classes:** 3 lec x 13wks, one 2hr computational lab x 11 wks. **AssumedKnowledge:** 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). **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 Schrodinger 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. **Session:** Semester 2. **Classes:** 2 lec x 11wks, 3 hr lab x 12 wks. **AssumedKnowledge:** 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). **Corequisites:** PHYS (2012 or 2912). **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. **Session:** Semester 1. **Classes:** 2 lec x 11wks, 2hr computational lab x 9 wks, 3 hr lab x 9 wks. **AssumedKnowledge:** 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). **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. **Session:** Semester 2. **Classes:** 3 lec x 13wks, 2hr computational lab x 11 wks. **AssumedKnowledge:** 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). **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. **Session:** Semester 2. **Classes:** 2 lec x 11wks, 3 hr lab x 12 wks. **AssumedKnowledge:** 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). **Corequisites:** PHYS (2912 or 2012). **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

The School of Physics offers units of study at the Senior Physics level in three categories: lecture-based, laboratory-based (Experimental Physics) and project-based (Special Projects).

Most units are offered at both the Normal and Advanced levels. Entry to the Advanced units of study is restricted to students who have met the entry requirements. The Special Project units are only available at the Advanced level and are undertaken in the research groups of the School of Physics.

It is possible to take up to 48 credit points in Senior Physics units of study. 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:

- (i) PHYS 3011 or 3911 (4 credit points), and
- (ii) at least 8 credit points of other lecture courses in Senior Physics (where COSC 3001, 3901, 3002 and 3902 may be counted towards this requirement), and
- (iii) at least 8 credit points chosen from laboratory-based and project-based units (ie. Experimental Physics and Special Projects).

Other notes:

- PHYS 3600 is only available to students in the Bachelor of Science (Environmental) degree.

- Topics in Physics A, B, C and D are restricted to students not majoring in Physics, giving them the flexibility to take a combination of lecture topics that is not offered in the standard units.

- Senior Physics was reorganised in 2004 and the units of study now offered supersede all previous units. Students continuing their studies in Senior Physics who already have credit in previously offered units will need to obtain approval before completing their enrolment, in order to ensure there is no duplication.

Further information concerning Senior Physics is available via www.physics.usyd.edu.au and from A/Professor Tim Bedding.

PHYS 3011 Electromagnetism/Quantum Mechanics

4 credit points. **Session:** Semester 1. **Classes:** 3 lec/wk. **Prerequisites:** 16 credit points of Intermediate Physics and 8 credit points of Intermediate Mathematics. **Assessment:** 3hr exam, assignments.

This unit (at either normal or advanced level) is compulsory for students undertaking a major in Physics. The first half of this unit covers the classical theory of electromagnetism and introduces Maxwell's equations in their differential form. The second half covers the fundamental concepts and formalism of quantum dynamics, and the application of angular momentum and symmetry in quantum mechanics.

Textbooks

David J. Griffiths, Introduction to Electrodynamics, 3rd ed.

Recommended Reference:

Robert Eisberg and Robert Resnick, Quantum Physics of Atoms, Molecules, Solids, Nuclei, and Particles, 2nd ed.

PHYS 3012 Condensed Matter Physics/Optics

4 credit points. **Session:** Semester 1. **Classes:** 3 lec/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** 3hr exam, assignments.

The first half of this unit covers 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 second half of this unit introduces students to modern optics, using the laser to illustrate the applications in studying the properties of matter and many important optical phenomena.

Textbooks

See the Senior Physics Handbook, available from the School of Physics or the website

<http://www.physics.usyd.edu.au/ugrad/spc.html>

PHYS 3013 Thermodynamics/Statistical Mechanics

4 credit points. **Session:** Semester 1. **Classes:** 3 lec/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** 3hr exam, assignments.

This unit consists of three modules: Thermodynamics, Energy Physics, and Statistical Mechanics. Thermodynamics introduces: the laws of thermodynamics, state variables and functions, open and closed systems, chemical and thermodynamic potentials, chemical reactions, phases; the thermodynamics of the electric and magnetic fields; applications to astrophysics and cosmology. Energy physics covers the generation, transport and use of energy, and its significance in social and political issues. Topics covered include sources of energy including fossil fuels, fission and fusion; thermal pollution; solar energy; photovoltaic solar energy; wind and other "green" sources of energy. Statistical mechanics principles include: ensembles, phase space and Liouville's theorem, applications to the ideal gas, ideal Bose and Fermi gases, degenerate Bose and Fermi gases, blackbody radiation, Debye theory, phonons, ionisation equilibrium and the Saha equation, the Ising model, and real gases.

Textbooks

See the Senior Physics Handbook, available from the School of Physics or the website

<http://www.physics.usyd.edu.au/ugrad/spc.html>

PHYS 3014 Topics in Physics A

4 credit points. **Session:** Semester 1. **Classes:** 3 lec/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** 3hr exam, assignments.

NB: Department permission required for enrolment. Approval required by the Senior Physics Coordinator prior to enrolment

This unit is normally restricted to students not majoring in Physics, giving them the flexibility to take a combination of lecture topics that is not offered in the standard units. Students must choose two from the following six Semester 1 half-courses (subject to time-tabling): Electromagnetism, Condensed Matter Physics, Quantum Mechanics, and Optics. Please obtain permission from the Senior Physics Coordinator. This unit may not be taken with any other Semester 1 lecture-based unit.

Textbooks

See the Senior Physics Handbook, available from the School of Physics or the website

3. Undergraduate tables and units of study

<http://www.physics.usyd.edu.au/ugrad/spc.html>

PHYS 3015 Topics in Physics B

6 credit points. **Session:** Semester 1. **Classes:** 58 lectures/semester. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** Exams totaling 4.5hrs, assignments.

NB: Department permission required for enrolment.

This unit is normally restricted to students not majoring in Physics, giving them the flexibility to take a combination of lecture topics that is not offered in the standard units. Students must choose 6 credit points worth from the following Semester 1 courses (subject to timetabling): Electromagnetism (2 credit points), Condensed Matter Physics (2 credit points), Thermodynamics / Energy Physics / Statistical Mechanics (4 credit points), Quantum Mechanics (2 credit points), and Optics (2 credit points). Please obtain permission from the Senior Physics Coordinator. This unit may not be taken with any other Semester 1 lecture-based unit.

Textbooks

See the Senior Physics Handbook, available from the School of Physics or the website

<http://www.physics.usyd.edu.au/ugrad/spc.html>

PHYS 3016 Experimental Physics A

4 credit points. **Session:** Semester 1, Semester 2. **Classes:** 4hrs prac/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** Practical assessment, report & oral presentation.

Physics is an experimentally based discipline. The aim of this course is to give students an appreciation of the analytical, technical and practical skills required to conduct modern experimental work in physics. Six experiments will be undertaken from a selection covering a range of areas, including waves and optics, astronomy, electronics, nuclear physics and the properties of matter.

Textbooks

See the Senior Physics Handbook, available from the School of Physics or the website

<http://www.physics.usyd.edu.au/ugrad/spc.html>

PHYS 3017 Experimental Physics B

8 credit points. **Session:** Semester 1, Semester 2. **Classes:** 8hrs prac/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** Practical assessment, report & oral presentation.

Physics is an experimentally based discipline. The aim of this course is to give students an appreciation of the analytical, technical and practical skills required to conduct modern experimental work in physics. Twelve experiments will be undertaken from a selection covering a range of areas, including waves and optics, astronomy, electronics, nuclear physics and the properties of matter.

Textbooks

See the Senior Physics Handbook, available from the School of Physics or the website

<http://www.physics.usyd.edu.au/ugrad/spc.html>

PHYS 3021 Plasma Physics/Nanoscience

4 credit points. **Session:** Semester 2. **Classes:** 3 lec/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** One 3 hr exam, assignments.

The first half of this unit, on plasma physics, has the following aims: (i) to introduce the physics of plasmas, which are collections of charged particles; (ii) to examine the behaviour of charged particles in the presence of electric and magnetic fields; (iii) to understand how the long-range interaction between charged particles leads to collective behaviour of the medium as a whole; and (iv) to appreciate how an understanding of plasmas is fundamental to space physics and astrophysics, controlled fusion research, and applications of electrical discharges including material modification processes. The second half of this unit will cover nanoscience, which is the study of the behaviour of light and matter as they interact with structures that have features on nanometer scales. Creating these structures requires methods for manipulating matter on these scales, and there are two approaches. The first involves direct manipulation "nanomachining", using methods such as lithography, Atomic Force Microscopy (AFM) and Focussed Ion Beams (FIBs). The second exploits self-assembly processes such as crystal growth, protein folding and phase segregation. These techniques can be applied to the fabrication and operation of devices in areas such as nanoelectronics, quantum computing and photonic crystals.

PHYS 3022 Astrophysics/High Energy Physics

4 credit points. **Session:** Semester 2. **Classes:** 3 lec/wk. **Prerequisites:** 16 credit points of Intermediate Physics and 8 credit points of Intermediate Mathematics. **Assessment:** One 3 hr exam, assignments.

The first half of this unit covers 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 second half of this unit focuses upon the formation of stars and

structure in the universe, and the forging of heavy elements, including the oxygen we breathe and the carbon in our bodies, during stellar evolution.

PHYS 3023 Biological & Medical Physics

4 credit points. **Session:** Semester 2. **Classes:** 3 lec/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics or Intermediate Biochemistry, 12 credit points of Junior units from Mathematics and Statistics and 12 credit points of Junior Physics. **Assessment:** One 3 hr exam, assignments.

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, computer simulations of biological systems, biomechanics, multicellular systems and neural networks. The medical physics part of this unit aims to provide an introduction to the applications of ionising radiation (radiation therapy, nuclear medicine and diagnostic radiology), with particular attention to the examination, diagnosis and treatment of patients within the hospital environment. It also includes discussion of medical imaging techniques such as Magnetic Resonance Imaging (MRI).

PHYS 3024 Topics in Physics C

4 credit points. **Session:** Semester 2. **Classes:** 3 lec/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** One 3hr exam, assignments.

NB: Department permission required for enrolment.

This unit of study is normally restricted to students not majoring in Physics, giving them the flexibility to take a combination of lecture topics that is not offered in the standard units. Students must choose two from the following six Semester 2 half-courses (subject to timetabling): Plasma Physics, Astrophysics, Biological Physics, Nanoscience, High Energy Physics, and Medical Physics. Please obtain permission from the Senior Physics Coordinator. This unit may not be taken with any other Semester 2 lecture-based unit.

PHYS 3025 Topics in Physics D

6 credit points. **Session:** Semester 2. **Classes:** 58 lectures/semester. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** Exams totaling 4.5hrs, assignments.

NB: Department permission required for enrolment.

This unit is normally restricted to students not majoring in Physics, giving them the flexibility to take a combination of lecture topics that is not offered in the standard units. Students must choose three from the following six Semester 2 half-courses (subject to timetabling): Plasma Physics, Astrophysics, Biological Physics, Nanoscience, High Energy Physics, and Medical Physics. Please obtain permission from the Senior Physics Coordinator. This unit may not be taken with any other Semester 2 lecture-based unit.

PHYS 3026 Experimental Physics C

4 credit points. **Session:** Semester 1, Semester 2. **Classes:** 4hrs prac/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** Practical assessment, report & oral presentation.

Physics is an experimentally based discipline. The aim of this course is to give students an appreciation of the analytical, technical and practical skills required to conduct modern experimental work in physics. Six experiments will be undertaken from a selection covering a range of areas, including waves and optics, astronomy, electronics, nuclear physics and the properties of matter.

PHYS 3027 Experimental Physics D

8 credit points. **Session:** Semester 1, Semester 2. **Classes:** 8 hr prac/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** Practical assessment, report and oral presentation.

Physics is an experimentally based discipline. The aim of this course is to give students an appreciation of the analytical, technical and practical skills required to conduct modern experimental work in physics.

PHYS 3600 Energy and the Environment

4 credit points. Dr Christopher Dey. **Session:** Semester 1. **Classes:** One 1hr lecture, one 1hr seminar & 2hrs made up of field trips. **Prerequisites:** ENVI 2002 or 12 credit points of Junior Physics. **Assessment:** General attendance/participation (15%), 3000w essay (45%), three assignments (15%), specific seminar presentation (25%).

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

This unit of study covers the following aspects of energy and the environmental: energy use, power generation including alternative methods, environmental impact of energy use and power generation including the greenhouse effect and other atmospheric impacts: transportation and pollution, energy management in buildings, solar thermal energy, photovoltaics, nuclear energy, socio-economic and political issues related to energy use and power generation.

The unit of study will consist of one lecture and one seminar per week, with a further two hours on average per week made up of 4 field trips.

PHYS 3911 Electromagnetism/Quantum Mechanics (Adv)

4 credit points. **Session:** Semester 1. **Classes:** 3 lec/wk. **Prerequisites:** 16 points of Intermediate Physics with a Credit average and 8 credit points of Intermediate Mathematics. **Assessment:** One 3 hr exam, assignments.

This unit of study covers the same topics as PHYS3011, with some more challenging material.

PHYS 3912 Condensed Matter Physics/Optics (Adv)

4 credit points. **Session:** Semester 1. **Classes:** 3 lec/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** One 3 hr exam, assignments.

This unit of study covers the same topics as PHYS3012, with some more challenging material.

PHYS 3913 Thermodynamics/Statistical Mechanics Adv

4 credit points. **Session:** Semester 1. **Classes:** 3 lec/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** One 3 hr exam, assignments.

This unit of study covers the same topics as PHYS3013, with some more challenging material.

PHYS 3914 Topics in Physics A (Adv)

4 credit points. **Session:** Semester 1. **Classes:** 3 lec/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** One 3 hr exam, assignments.

NB: Department permission required for enrolment.

This unit of study covers the same topics as PHYS3014, with some more challenging material.

PHYS 3915 Topics in Physics B (Adv)

6 credit points. **Session:** Semester 1. **Classes:** 58 lectures/semester. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** Exams totalling 4.5 hours, assignments.

NB: Department permission required for enrolment.

This unit of study covers the same topics as PHYS3015, with some more challenging material.

PHYS 3916 Experimental Physics A (Adv)

4 credit points. **Session:** Semester 1, Semester 2. **Classes:** 4 hr prac/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** Practical assessment, report and oral presentation.

This unit of study covers the same topics as PHYS3016, with some more challenging material.

PHYS 3917 Experimental Physics B (Adv)

8 credit points. **Session:** Semester 1, Semester 2. **Classes:** 8 hr prac/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** Practical assessment, report and oral presentation.

This unit of study covers the same topics as PHYS3017, with some more challenging material.

PHYS 3918 Special Projects A (Adv)

4 credit points. **Session:** Semester 1, Semester 2. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics.

NB: Department permission required for enrolment. Departmental permission needed.

The equivalent of 4 hours per week is spent 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 by carrying out a project under the supervision of a researcher, and as part of a research group. This will allow students to apply their knowledge of physics and scientific practice and will serve as valuable preparation for a research project at Honours level and beyond. This unit addresses several of the University's generic attributes, including: an appreciation of the requirements and characteristics of research; the ability to plan and achieve goals; and the ability to work with others.

PHYS 3921 Plasma Physics/Nanoscience (Adv)

4 credit points. **Session:** Semester 2. **Classes:** 3 lec/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** One 3 hr exam, assignments.

This unit of study covers the same topics as PHYS3021, with some more challenging material.

PHYS 3922 Astrophysics/High Energy Physics (Adv)

4 credit points. **Session:** Semester 2. **Classes:** 3 lec/wk. **Prerequisites:** 16 credit points of Intermediate Physics with a Credit average and 8 credit points of Intermediate Mathematics. **Assessment:** One 3 hr exam, assignments.

This unit of study covers the same topics as PHYS3022, with some more challenging material.

Textbooks

See the Senior Physics Handbook, available from the School of Physics or the website

<http://www.physics.usyd.edu.au/ugrad/spc.html>

PHYS 3923 Biological & Medical Physics (Adv)

4 credit points. **Session:** Semester 2. **Classes:** 3 lec/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics or Intermediate Biochemistry with a Credit average and 12 credit points of Junior units from Mathematics and Statistics and 12 credit points of Junior Physics. **Assessment:** One 3 hr exam, assignments.

This unit of study covers the same topics as PHYS3023, with some more challenging material.

PHYS 3924 Topics in Physics C (Adv)

4 credit points. **Session:** Semester 2. **Classes:** 3 lec/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** One 3 hr exam, assignments.

NB: Department permission required for enrolment.

This unit of study covers the same topics as PHYS3024, with some more challenging material.

PHYS 3925 Topics in Physics D (Adv)

6 credit points. **Session:** Semester 2. **Classes:** 58 lectures/semester. **Prerequisites:** 16 credit points of Intermediate Physics with a Credit average and 8 credit points of Intermediate Mathematics. **Assessment:** Exams totalling 4.5 hours, assignments.

NB: Department permission required for enrolment.

This unit of study covers the same topics as PHYS3025, with some more challenging material.

PHYS 3926 Experimental Physics C (Adv)

4 credit points. **Session:** Semester 1, Semester 2. **Classes:** 4 hr prac/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** Practical assessment, report and oral presentation.

This unit of study covers the same topics as PHYS3026, with some more challenging material.

PHYS 3927 Experimental Physics D (Adv)

8 credit points. **Session:** Semester 1, Semester 2. **Classes:** 8 hr prac/wk. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics. **Assessment:** Practical assessment, report and oral presentation.

This unit of study covers the same topics as PHYS3027, with some more challenging material.

PHYS 3928 Special Projects B (Adv)

4 credit points. **Session:** Semester 1, Semester 2. **AssumedKnowledge:** 8 credit points of Intermediate Mathematics. **Prerequisites:** 16 credit points of Intermediate Physics.

NB: Department permission required for enrolment.

The equivalent of 4 hours per week is spent 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 by carrying out a project under the supervision of a researcher, and as part of a research group. This will allow students to apply their knowledge of physics and scientific practice and will serve as valuable preparation for a research project at Honours level and beyond. This unit addresses several of the University's generic attributes, including: an appreciation of the requirements and characteristics of research; the ability to plan and achieve goals; and the ability to work with others.

Physics Honours

Dr Anne Green

Qualifying: 24 credit points of Senior Physics or equivalent.

Classes: 6 lecture courses & research project.

Assessment: coursework exams, one 40 page report.

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

3. Undergraduate tables and units of study

relativity, cosmology, space and solar physics, sub-atomic physics, relativistic quantum theory, medical physics, electromagnetism 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. Dr Meloni Muir. **Session:** Semester 1. **Classes:** 5 lec, 3 prac, 2 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. **Assessment:** Two written exams (one on lectures and one integrating lectures, PBLs and practicals) and group and individual written presentations.

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.

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. Dr Catherine Leamey and Dr Dario Protti. **Session:** Semester 1. **Classes:** 5 lec, 3 prac, 2 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. **Assessment:** Two written exams (one on lectures and one integrating lectures, PBLs and practicals) and 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 of MBLG 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 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. 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. Dr Meloni Muir. **Session:** Semester 2. **Classes:** 5 lec, 3 prac, 2 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. **Assessment:** Two written exams (one on lectures and one integrating lectures, PBLs and practicals) and group and individual written 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. Dr Dario Protti and Dr Catherine Leamey. **Session:** Semester 2. **Classes:** 5 lec, 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. **Assessment:** Two written exams (one on lectures and one integrating lectures, PBLs and practicals) and 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

PHSI 3001 Neuroscience

12 credit points. Dr Dario Protti, Dr John Mitrofanis. **Session:** Semester 1. **Classes:** 4 lec & 8 prac/wk. **Prerequisites:** For BMedSc: at least 32 credit points of Intermediate BMed units including BMED (2501 and 2503 and 2505). For others: PHSI (2101 or 2001 or 2901) or ANAT 2003; and MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901); plus at least 8 credit points of Intermediate Science units of study. **Assessment:** Two 2hr exams, spot test, essay, prac report, seminar presentation.

NB: A minimum of 8 credit points of Intermediate Physiology and/or Anatomy is recommended. From 2006 the prerequisites will be: Except for BMedSc students, PHSI (2101 or 2001 or 2901 or 2005 or 2905), ANAT (2003 or 2010), 6 credit points of MBLG plus at least 6 credit points of Intermediate Science units of study. For BMedSc: 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)

The aim of this unit of study is to give the student a comprehensive view of the structure and function of the human 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. The lecture series addresses

the different topics, each of which offers special insight into the normal function of the nervous system in health and disease.

Textbooks

Kandel E, Schwartz J, & Jessell T. Principles of Neural Science (4th ed), McGraw Hill

PHSI 3901 Neuroscience (Advanced)

12 credit points. Dr D Protti, Dr J Mitrofanis. **Session:** Semester 1. **Classes:** 4 lec, 1 tut & 7hrs of prac/wk. **Prerequisites:** For BMedSc: at least 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: PHSI (2001 or 2101 or 2901) or ANAT 2003; and MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901); plus at least 8 credit points of Intermediate Science units of study. **Assessment:** Two 2hr exams, spot test, essay, prac report, seminar presentation. **NB:** Department permission required for enrolment. Permission required for enrolment. Available to selected students who have achieved a mark of at least 65 in the prerequisite units of study. From 2006 the prerequisites will be: Except for BMedSc students, PHSI (2001 or 2101 or 2901 or 2005 or 2905), ANAT (2003 or 2010), 6 credit points of MBLG plus at least 6 credit points of Intermediate Science units of study. For BMedSc: 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). The lecture component and practical component are the same as for PHSI 3001. Selected students will be set special advanced assignments and attend tutorials on those assignments during the practical sessions.

PHSI 3002 Neuroscience - Cellular and Integrative

12 credit points. Dr Catherine Leamey, Dr Kevin Keay. **Session:** Semester 2. **Classes:** 3 lec, 2 tut & 6hr research/wk. **Prerequisites:** For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. **Assessment:** One 2hr exam, tutorial participation, research report. **NB:** From 2006 the prerequisites will be: Except for BMedSc students, 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics (or for students following the old program: PHSI (2101 or 2001 or 2901 or 2005 or 2905), ANAT (2003 or 2010), 6 credit points of MBLG plus at least 6 credit points of Intermediate Science units of study). For BMedSc: 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).

This second semester unit is designed to introduce students to "cutting edge" issues in the neurosciences. In a combination of small lectures, discussion groups and laboratory or library based research projects, new, innovative or controversial issues in neuroscience research are covered. These usually include discussion of findings published in the most recent editions of scientific journals and often research in progress in the departments of Anatomy and Histology and Physiology (Institute of Biomedical Research). The unit follows two general "strands", the first deals with cellular and molecular approaches, and the second, integrative approaches to understanding nervous system function and dysfunction. Some of the issues covered in recent years have included mechanisms of neurotoxicity and how to prevent neurodeath, how to prevent shock following trauma, the design of novel anti-schizophrenic and anti-parkinsonian drugs, the ways in which development of the brain is organised and what happens when it goes wrong.

PHSI 3902 Neuroscience- Cellular & Integrative Adv

12 credit points. Dr C Leamey & Dr K Keay. **Session:** Semester 2. **Classes:** 3 lec, 2 tut & 6hr prac/wk. **Prerequisites:** For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: Credit or better in PHSI 3001; and 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. **Assessment:** One 2hr exam, tutorial participation, research report. **NB:** Department permission required for enrolment. Permission required for enrolment. Available to selected students who have achieved a mark of at least 65 in the prerequisite units of study. From 2006 the prerequisites will be: Except for BMedSc students, Credit or better in PHSI3001 and 16 credit points of Intermediate Science units of study from Anatomy and Histology, Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Molecular Biology and Genetics, Pharmacology, Physics, Physiology, Psychology or Statistics. From 2006 the prerequisites will be: Except for BMedSc students, PHSI (2101 or 2001 or 2901 or 2005 or 2905), ANAT (2003 or 2010), 6 credit points of MBLG plus at least 6 credit points of Intermediate Science units of study. For BMedSc: 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).

The lecture and practical component are the same as for PHSI3002. Selected students will be set special advanced assignments and attend tutorials on those assignments during the practical sessions.

PHSI 3003 Heart and Circulation

12 credit points. Dr J Hoh, Mrs I Schneider. **Session:** Semester 2. **Classes:** 4 lec, 2 tut & 6hr prac/wk. **AssumedKnowledge:** PHSI (2001 or 2101 or 2901) and BCHM (2002 or 2102 or 2902). **Prerequisites:** For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: PHSI (2002 or 2102 or 2902) and MBLG (2001 or 2101 or 2901) plus at least 8 credit points of Intermediate Science units of study. **Assessment:** One 3hr exam, essays, prac reports, seminar presentations. **NB:** A minimum of 8 credit points of Intermediate Physiology and BCHM (2002 or 2102 or 2902) are strongly recommended. From 2006 the prerequisites will be: For BMedSc: 42 credit points of BMED Intermediate units including BMED (2801, 2802, 2803 & 2806). For others: PHSI (2002 or 2102 or 2902) or {PHSI (2005 or 2905) and PHSI (2006 or 2906)} and 6 credit points of MBLG or BCHM (2001 or 2101 or 2901)

3. Undergraduate tables and units of study

This unit of study offers an up to date and in depth treatment of 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 muscle 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, the unit of study deals with short term (neural) mechanisms controlling the blood pressure, and how the system behaves during exercise and other stresses. Long term (hormonal) mechanisms regulating blood pressure via the renal control of extracellular fluid volume, and the pathophysiology of atherosclerosis and hypertension are also discussed.

PHSI 3903 Heart and Circulation (Advanced)

12 credit points. Dr J Hoh assisted by Mrs I Schneider. **Session:** Semester 2. **Classes:** 4 lec, 2 tut & 6hr prac/wk. **AssumedKnowledge:** PHSI (2001 or 2101 or 2901) and BCHM (2002 or 2102 or 2902). **Prerequisites:** For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2503 and 2505). For others: PHSI (2002 or 2102 or 2902) and MBLG (2001 or 2101 or 2901) plus at least 8 credit points of Intermediate Science units of study. **Assessment:** One 3hr exam, essays, prac reports, seminar presentations. **NB:** Department permission required for enrolment. Permission required for enrolment. Available to selected students who have achieved a mark of at least 65 in the prerequisite units of study. A minimum of 8 credit points of Intermediate Physiology and BCHM (2002 or 2102 or 2902) are strongly recommended. From 2006 the prerequisites will be: For BMedSc: 42 credit points of BMED Intermediate units including BMED (2801, 2802, 2803 & 2806). For others: PHSI (2002 or 2102 or 2902) or {PHSI (2005 or 2905) and PHSI (2006 or 2906)} and 6 credit points of MBLG or BCHM (2001 or 2101 or 2901)

The lecture and practical component are the same as for PHSI3003. Selected students will be set special advanced assignments and attend tutorials on those assignments as negotiated with a member of the academic staff.

PHSI 3004 Human Cellular Physiology

12 credit points. Dr Bill Phillips. **Session:** Semester 1. **Classes:** 4 lec, 6 prac & 2 small group PBL/wk. **Prerequisites:** For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). For others: PHSI (2001 or 2101 or 2901) and PHSI (2002 or 2102 or 2902) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901). **Assessment:** Written exams, 1 essay, practical reports, oral presentations.

NB: From 2006 the prerequisites will be: PHSI (2001 or 2101 or 2901 or 2005 or 2905), PHSI (2002 or 2102 or 2902 or 2006 or 2906) and MBLG (2001 or 2101 or 1001) or BCHM(2001 or 2101 or 2901). From 2006 the prerequisites will be: Except for BMedSc students, PHSI (2101 or 2001 or 2901 or 2005 or 2905), ANAT (2003 or 2010), 6 credit points of MBLG plus at least 6 credit points of Intermediate Science units of study. For BMedSc: 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).

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 and practical classes 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, cystic fibrosis and osteoporosis.

PHSI 3904 Human Cellular Physiology (Advanced)

12 credit points. Dr Bill Phillips. **Session:** Semester 1. **Classes:** 4 lec, 6 prac & 2 small group PBL/wk. **Prerequisites:** For BMedSc: 32 credit points of Intermediate BMED units including BMED (2501 and 2502 and 2504). For others: PHSI (2001 or 2101 or 2901) and PHSI (2002 or 2102 or 2902) and either MBLG (2001 or 2101 or 2901) or BCHM (2001 or 2101 or 2901). **Assessment:** Written exams, 1 essay, practical reports, oral presentations.

NB: Department permission required for enrolment. Permission is required for enrolment. Available to selected students who have achieved an average of at least 65 in the prerequisite units of study. From 2006 the prerequisites will be: PHSI (2001 or 2101 or 2901 or 2005 or 2905), PHSI (2002 or 2102 or 2902 or 2006 or 2906) and MBLG (2001 or 2101 or 1001) or BCHM(2001 or 2101 or 2901). For BMedSc: 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).

The lecture and practical component are the same as for PHSI3004. Selected students will be set special advanced assignments and attend tutorials on those assignments as negotiated with a member of the academic staff.

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

3. Undergraduate tables and units of study

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.

PLNT 2001 Applied Plant Biochemistry

6 credit points. Prof Les Copeland (Coordinator), Dr Rosanne Quinnell. **Session:** Semester 1. **Classes:** Classes (3 lec or tut; 3 prac or sem)/wk. **Prerequisites:** 12 credit points of Junior Chemistry and 12 credit points of Junior Biology or in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202. **Assessment:** One 2-hr exam (50%), laboratory reports (20%) case study presentation (15%), self-directed learning exercises (15%).

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. 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 advanced 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 independent library research and group projects 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 at least once a week for information on: learning resources, information bulletins, tutorial modules on making oral and written presentations, links to library, academic policies, Laboratory Safety tutorials, student support, Learning Centre. Students will additionally engage in the equivalent of 1 hour per week of tutor-assisted self-directed learning on biochemical calculations and assigned readings.

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. Dr Glenda Wardle & Dr Murray Henwood. **Session:** Semester 1. **Classes:** (2 lec & 3 prac)/wk, audiovisual. **Prerequisites:** 12 credit points of Junior Biology or in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 or BIOL1001 and ENVI1001. **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 2003 Plant Form and Function

6 credit points. 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 in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 or BIOL1001 and ENVI1001. **Assess-**

ment: 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 audio-visual 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, Rockville, Maryland

A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of Semester.

PLNT 2901 Applied Plant Biochemistry (Advanced)

6 credit points. Prof Les Copeland (Coordinator), Dr Rosanne Quinnell. **Session:** Semester 1. **Classes:** (3 lec 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 in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202. **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 2902 Aust Flora: Ecology & Conservation (Adv)

6 credit points. Dr Glenda Wardle & Dr Murray Henwood. **Session:** Semester 1. **Classes:** (2 lec & 3 prac)/wk, audiovisual. **Prerequisites:** Distinction average in 12 credit points of Junior Biology or in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 or BIOL1001 and ENVI1001. **Assessment:** One 2-hr exam (40%), laboratory reports (20%) research project (20%), one 2-hr practical exam (20%).

Qualified 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 2903 Plant Form and Function (Advanced)

6 credit points. A/Prof Bruce Sutton and 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:** Distinction average in 12 credit points of Junior Biology or in 2005 (or with the Dean's permission in 2006), BIOL1201 and BIOL1202 or BIOL1001 and ENVI1001. **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, Gruissem W, Jones RL (2000) Biochemistry and Molecular Biology of Plants, ASPP, Rockville, Maryland

A Study Guide for the unit will be available for purchase from the Copy Centre during the first week of Semester.

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 six Senior units of study selected from PSYC 3201*, 3202*, 3203, 3204, 3205, 3206, 3209, 3210, 3211, 3212, 3214, 3215 and 3216 (*Required for entry to Fourth Year). Mid-year entry is possible and involves modification of this sequence.

The units of study available are:

PSYC 1001, 6 credit points

PSYC 1002, 6 credit points

PSYC 2011, 6 credit points

PSYC 2012, 6 credit points

PSYC 2013, 6 credit points

PSYC 2014, 6 credit points

PSYC 3201, 4 credit points

PSYC 3202, 4 credit points

PSYC 3203, 4 credit points

PSYC 3204, 4 credit points

PSYC 3205, 4 credit points

PSYC 3206, 4 credit points

PSYC 3209, 4 credit points

PSYC 3210, 4 credit points

PSYC 3211, 4 credit points

PSYC 3212, 4 credit points

PSYC 3214, 4 credit points

PSYC 3215, 4 credit points

PSYC 3216, 4 credit points

Students who have completed PSYC 3001 and/or 3002 must obtain the permission of the Head of School of Psychology before enrolling in any of PSYC 3201 to 3216.

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, 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.

Information about registration meetings for Intermediate and Senior Psychology students will also be posted at the Enrolment Centre, and on the School noticeboards on the 5th floor of the Griffith-Taylor Building, as well as the School web-site.

Enquiries

The main enquiry office of the School is Room 416, Griffith-Taylor Building (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 av-

3. Undergraduate tables and units of study

erage of at least Pass with Credit in Intermediate and in Senior Psychology units of study. These Psychology units include Psychology 2011, 2012, 2013, 2014, 3201, 3202, and at least four other Senior Psychology units from Psychology 3203, 3204, 3205, 3206, 3209, 3210, 3211, 3212, 3214, 3215 and 3216. 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 web site for more information. <http://www.summer.usyd.edu.au/>

PSYC 1001 Psychology 1001

6 credit points. **Session:** Summer, Semester 1. **Classes:** 3 lec & a tutorial of 1hr/wk and 1hr/wk of additional web-based (self-paced) material related to the tutorial (1hr/wk practical/demonstration). **Assessment:** One 2.5hr exam, one 1000w 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. **Session:** Summer, Semester 2. **Classes:** 3 lectures & a tutorial of 1hr/wk and 1hr/wk of additional web-based (self-paced) material related to the tutorial (1hr/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. A/Prof Iain McGregor. **Session:** Semester 1. **Classes:** 3 lec, 1 tut/week. **Prerequisites:** PSYC (1001 and 1002). **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

3. Undergraduate tables and units of study

See school website

PSYC 2012 Statistics & Research Methods for Psych

6 credit points. Dr Margaret Charles. **Session:** Semester 1. **Classes:** 2 lec, 1 tut / wk + 1 lec, 1 tut / fortnight. **Assumed Knowledge:** Recommended: HSC Mathematics, any level. **Prerequisites:** PSYC (1001 and 1002). **Assessment:** One 2hr exam; 3 class tests, 1000w group project, one 1hr 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. Dr Karen Croot. **Session:** Semester 2. **Classes:** 3 lec & 1 tut/wk. **Prerequisites:** PSYC (1001 and 1002). **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: TBA

PSYC 2014 Personality and Differential Psychology

6 credit points. Dr Sabina Kleitman. **Session:** Semester 2. **Classes:** 3 lec & 1 tut/wk. **Prerequisites:** PSYC (1001 and 1002). **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 the key topics in individual abilities and group differences. Students are expected to gain an understanding about the major theories of intelligence, associated research methods, and the traditional areas of group differences.

Textbooks

For Theories of Personality component

Monte, C. F. & Solland, R. N. (2003). Beneath the Mask: An Introduction to Theories of Personality. Wiley.

For the Differential Psychology component

there is no set text. However, the references listed below are considered essential reading to demonstrate meritorious performance in this part of the unit of study.

Brody, N. (1992). Intelligence (2nd Ed.). San Diego, CA: Academic Press.

Mackintosh, N. (1998). IQ and Human Intelligence. New York: Oxford University Press.

Neisser, U. et al (1996). Intelligence: Knows and Unknowns. American Psychologist, 51 (2), 77-101.

PSYC 3201 Statistics and Psychometrics

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 prac & 1hr unsupervised computer practice/wk. **Prerequisites:** At least 8 credit points of Intermediate Psychology including PSYC (2112 or 2012). **Assessment:** Class test, assignment, examination. PSYC 3201 consists of two components, Statistics and Psychometrics. The aim of the Statistics component is to teach students the structure of experiments for which analysis of variance would be an appropriate means of analysis. The unit of study aims to develop students' ability to ask more focused questions than can be answered by omnibus F tests, specifically by the testing of contrasts. The problems of multiple inferences, and the control of the Type I error rate, are an integral aspect of the unit of study.

The objective of the Psychometrics component is to introduce students to measurement as understood in Psychology, to a range of

quantitative theories and to the basic concepts of classical psychometrics, item analysis and test construction.

Textbooks

See School website

PSYC 3202 History and Philosophy of Psychology

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut & 1hr self paced library research/wk. **Prerequisites:** 12 credit points of Intermediate Psychology. **Assessment:** 2hr exam, 1 x 2000 word essay.

PSYC 3202 consists of two components: History of Psychology and Philosophy of Psychology. The History of Psychology introduces the historical foundations of Western psychology from Descartes through to the cognitive revolution in the 1960's. In covering important individuals, movements and themes, attention is drawn to debate about interpretation of the historical process, and to analysis of the form and structure of the various arguments presented in favour of certain psychological theories. The Philosophy of Psychology introduces traditional and contemporary themes in the philosophy of science and philosophy of mind, with focus on the relevance to psychology. Students are expected to become aware that metatheoretical analysis has a central place in psychology alongside empirical methods, that the basic concepts and theories of psychology involve philosophical assumptions which can be articulated and examined.

Textbooks

See School website

PSYC 3203 Abnormal Psychology

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** At least 8 credit points of Intermediate Psychology including PSYC (2111 or 2011) and PSYC (2113 or 2114). **Assessment:** 2hr exam, report/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 disorder; Conduct disorder; Anxiety disorders; Depression.

Textbooks

See School website

PSYC 3204 Behavioural Neuroscience

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 prac/wk. **Prerequisites:** At least 8 credit points of Intermediate Psychology including PSYC (2111 or 2011). **Assessment:** 2hr exam, class quiz, poster presentation, class participation.

This unit of study carries on from the Neuroscience component of PSYC 2111, providing more specialised coverage in the areas of psychopharmacology, addiction, molecular neuroscience, sensorimotor integration and the neural basis of learning and memory. Topics to be covered include Psychopharmacology (basic actions of drugs on the brain, mechanism of action of antidepressant, antipsychotic and anxiolytic drugs, effects of recreational drugs (cannabis, MDMA, alcohol, opiates) on brain, behaviour and cognition); Addiction (the neural basis of addiction, animal models of intravenous drug use and relapse to drug seeking behaviour); Molecular Neuroscience (effects of drugs on gene expression, the use of knockout mice and transgenic techniques in neuroscience); Neurobiology of learning and memory (the synaptic and neuroanatomical basis of associative learning and memory retrieval); Sensorimotor Integration (functions of the vestibular system, the role of the hippocampus in spatial learning). In the first few weeks of the unit, tutorials consist of demonstrations and practicals covering basic neuroanatomy, histology and neuropharmacology. In the latter part of the course, tutorials involve groups of students giving poster presentations of recent "hot" papers in the behavioural neuroscience field.

Textbooks

See School website

PSYC 3205 Cognition, Language and Thought

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 2hr prac/fortnight. **Prerequisites:** PSYC (2112 and 2113). **Assessment:** 2hr exam, class quiz, report & class participation.

The aim of this unit of study is to extend the theories and methods of investigating memory and attentional processes discussed in PSYC 2113 to consider a number of domains of higher cognitive processing. One segment of the course will deal with language processing and focus on theoretical issues and research evidence about the processes involved in speech perception and production, visual word recognition reading, language comprehension and language acquisition. The remainder of the course will deal with topics such as the development of expertise, creativity and problem solving, decision-making and the relationship between cognition and emotion. The practical pro-

gram will expose students to a variety of the research methods used to investigate higher cognitive processes, develop students' understanding of how these methods can be used to investigate hypotheses about mental processes, consider applications of cognitive research to real-world problems and provide opportunities to discuss the theoretical, methodological and practical implications of the cognitive psychological issues considered in lectures and tutorials.

Textbooks
See School website

PSYC 3206 Developmental Psychology

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Psychology. **Assessment:** 2hr exam, report, tutorial assessment.

This unit of study examines various theoretical approaches to 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 current developmental theory and research. In addition 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 required to apply their knowledge in practical exercises involving observations of children.

Textbooks
See School website

PSYC 3209 Learning and Motivation

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** PSYC (2111 and 2112). **Assessment:** Report, exam.

PSYC 3209 addresses the fundamental concepts and more important research findings of contemporary learning theory and selected approaches to motivation. It examines the application of such fundamental research to issues such as drug tolerance, food choice, stress and health. It is designed to develop skills in reading primary sources in this area; and to provide the opportunity for hands-on experience of planning and carrying out a research project.

Textbooks
See School website

PSYC 3210 Perceptual Systems

4 credit points. **Session:** Semester 1. **Classes:** 2 hrs lec & 1 hr lab/wk. **Prerequisites:** PSYC (2111 and 2112). **Assessment:** 2hr exam, tutorial assessment.

This unit covers at an advanced level selected topics in Perception from both the psychophysical and neuroscientific perspectives. Students are expected to gain an understanding of the main theoretical perspectives in current research, to appreciate the significance and relevance of basic perceptual research for understanding normal perceptual functioning, and to be able to evaluate the conceptual and empirical worth of research contributions.

Textbooks
See School website

PSYC 3211 Psychological Assessment & Organisational

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** At least 8 credit points of Intermediate Psychology including PSYC (2112 or 2012) and PSYC 2114. **Assessment:** 2hr exam, written report.

The Psychological Assessment component covers fundamental issues in the construction, evaluation and administration of psychological tests with particular emphasis on tests of cognitive ability and personality. Students will be given 'hands-on' experience with a variety of psychological instruments including those used for personality, aptitude and clinical assessment. A variety of psychometric 'skills' (eg: calculating reliability, rudiments of scale construction) will also be taught. This component of the unit will conclude with an introduction of state of the art issues in psychological assessment including demonstrations of adaptive and computerised testing and discussion of item response theory (IRT) and factor analysis.

The Organisational Psychology component focuses on performance in the work place and the influence of social factors on such performance. Various aspects of the workplace will be examined, including leadership, workplace conflict, job satisfaction, selection and appraisal.

Textbooks
See School website

PSYC 3212 Social Psychology

4 credit points. **Session:** Semester 1. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** 8 credit points of Intermediate Psychology including PSYC 2113. **Assessment:** 1.5hr exam, classwork quiz.

PSYC 3212 continues the coverage of topics in Social Psychology begun in the unit PSYC 2113. The unit is divided into topic areas where the focus is on evaluating theories and the relevant evidence. In any one year approximately four topics will be covered from the following list: affiliation and attraction, social motivation (especially

aggression), social cognition, social competence, the impact of aspects of the physical environment on social behaviour, jury decision making, interpersonal communication, and social development through the lifespan. 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 the topics covered in lectures.

Textbooks
See School website

PSYC 3214 Communication and Counselling

4 credit points. **Session:** Semester 2. **Classes:** 2 lec & 1 tut/wk. **Prerequisites:** At least 8 credit points of Intermediate Psychology including PSYC (2113 or 2013) and PSYC (2114 or 2014). **Assessment:** 2 hour examination, tutorial assessments.

The communication component 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. The counseling component of the unit aims to provide an introduction to counseling psychology, to critically examine the theoretical foundations of counseling processes and their application, and to consider relevant empirical research and professional issues.

Textbooks
See School website

PSYC 3215 Cognitive Neuroscience & Neuropsychology

4 credit points. **Session:** Semester 2. **Classes:** 2 lec/wk & 2 hr lab/fortnight. **Prerequisites:** At least 8 credit points of Intermediate Psychology including two of PSYC (2111 or 2011), PSYC (2112 or 2012), PSYC (2113 or 2013). **Assessment:** 2 hr exam; laboratory class assessment.

The unit of study will encompass two components. The Cognitive Neuroscience component will focus on approaches to studying the human brain at different scales of function (microscopic to macroscopic), the link between cognitive and biological models of brain function and dysfunction, and the application of these models to understanding cognitive neuropsychiatric disorders such as post-traumatic stress, schizophrenia and attention-deficit disorder. The Cognitive Neuropsychology component will use evidence about the selective breakdown of specific cognitive domains (eg memory, language, visual cognition, praxis) in a variety of neurodegenerative and acquired disorders to (1) examine the functional neuroanatomy underpinning those cognitive domains and (2) explore the implications of focal cognitive deficits in neurological patients for models of normal cognitive function.

Textbooks
See School website

Psychology Honours

Prerequisite: Average of Pass with Credit or better in 24 credit points of Intermediate Psychology, and also in at least 24 credit points of Senior Psychology which must include PSYC 3201 and 3202. 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.

4. Talented Student Program

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

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 great 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.

Studies undertaken in the Talented Student Program are included separately on the student's academic transcript 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 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(6) of the BSc degree, Section 1(6) of the BLibStud 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 departments). 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 and the Dean will also arrange for special notes to be placed on the student's transcript, recording the TSP activity.

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 Glenda Wardle

Students may undertake additional seminars and/or special project work.

Chemistry

Coordinator: Dr Meredith Jordan; Dr Cameron Kepert; and Dr Mal McLeod

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 Rachel Ankeny

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 Irena Koprinska

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 Ian Spence

Molecular and Microbial Bioscience

(for Biochemistry, Molecular Biology and Genetics, Molecular Biotechnology and Microbiology)

Coordinator: Dr Peter New

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.

4. Talented Student Program

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 Colin Clifford

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 classwork 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 web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

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. University of Sydney (Coursework) Rule

2. 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 Arts/Bachelor of Science – BA/BSc
- 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)/Bachelor of Science (Nutrition) – BApplSc(ExSS)/BSc(Nutrition)
- Bachelor of Science (Advanced)/Bachelor of Medicine and Bachelor of Surgery – BSc (Advanced)/MBBS

3. 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)

4. Bachelor of Information Technology – BIT

5. 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

6. Bachelor of Psychology – BPsych

7. Bachelor of Science in Media and Communications – BScMediaComm

The Faculty of Arts offers the:

8. Bachelor of Liberal Studies – BLibStud

The Bachelor of Liberal Studies includes the specially designated stream:

- Bachelor of Liberal Studies (International) – BLibStud (International)
- Bachelor of Liberal Studies (Advanced) – BLibStud (Adv)

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

- University of Sydney (Coursework) Rule 2000

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;
- (l) Bachelor of Arts/Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)];
- (m) Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)]/Bachelor of Commerce;
- (n) Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)]/Bachelor of Engineering;
- (o) Bachelor of Engineering/Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)];
- (p) Bachelor of Education (Secondary: Science)/Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)];
- (q) Bachelor of Education (Secondary: Mathematics) / Bachelor of Science [or BSc(Advanced) or BSc(Advanced Mathematics)];
- (r) Bachelor of Education (Secondary: Science) /Bachelor of Science (Psychology); and
- (s) Bachelor of Nursing/Bachelor of Science [or BSc (Advanced) or BSc (Advanced Mathematics)]
- (t) 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

5. Undergraduate degree regulations

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 enrolls, 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;
- (5) no more than 60 credit points from Junior units of study; and

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 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.

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 58 (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) candid-

ates. 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 1F.

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; 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.

(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 (*Subject to Academic Board approval*)

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(1)(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 student must complete:

- (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; 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.

(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;

5. Undergraduate degree regulations

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.

Joint Resolutions for BA/BSc and BSc/BA degrees

42. 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 either a BA/BSc or BSc/BA course.

43. 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 48 or 49 and in addition, except with the permission of the Dean:

(1) include at least 16 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; 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.

(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.

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.

45. 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.

46. Supervision of all students in the combined degrees will be the responsibility of the Faculty of Science and the Faculty of Arts which will alternate in an agreed pattern.

47. The Deans of the Faculties of Arts and Science shall jointly exercise authority in any matter concerning the combined degrees not otherwise dealt with in these resolutions.

BA/BSc combined degrees

48. 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) at least 96 credit points from Science subject areas;

(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 or Statistics;

(4) no more than 96 credit points from Junior units of study;

(5) a major in a Science area; and

(6) at least 72 credit points of Senior units of study in Arts subject areas from Part A including a major from Part A of the Table of undergraduate units of study in the Faculty of Arts.

BSc/BA combined degrees

49. To qualify for the award of the pass degrees a student normally shall satisfy the requirements for the BA/BSc combined degrees in Section 48 and complete the requirements for the BSc in the first six semesters of enrolment.

Science/Engineering: Joint Resolutions

BE/BSc combined degrees

50. 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.

51. 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).

52. 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 51:

(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.

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

54. 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.

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

56. 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

57. 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.

58. 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.

59. 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 57 and 58:

(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.

60. The requirements of Sections 58 or 59 must be completed in one year of full-time study or two years of part-time study.

61. 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 92-95.

62. Students who are so qualified may undertake an honours course in the BSc in accordance with Sections 12-20.

63. 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

64. 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).

65. 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 70 or 71 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; 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.

(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.

66. 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.

67. 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.

68. Supervision of all students in the combined degrees will be the responsibility of the Faculty of Education.

69. 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

70. 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 or Statistics;
- (4) a major in a Science area;
- (5) a major in Education;
- (6) at least 32 credit points of units of study in Methods and Practice of Teaching;
- (7) 32 credit points in Teaching and Learning including successful completion of the practicum; and
- (8) no more than 100 credit points from Junior units of study.

BEd(Secondary:Mathematics)/BSc combined degrees

71. 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 or Statistics;
- (4) a major in the Science area of Mathematics or Statistics;
- (5) a major in Education;
- (6) at least 32 credit points of units of study in Methods and Practice of Teaching;
- (7) 32 credit points in Teaching and Learning including successful completion of the practicum; and
- (8) no more than 100 credit points from Junior units of study.

BEd(Secondary)/BSc(Psychology) combined degrees

72. 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 244 credit points including:

Years I to III:

- (1) at least 36 credit points from Junior units of study from Science subject areas of which 12 must be in Mathematics and Statistics, 12 in Psychology and 12 in either Chemistry or Physics;
- (2) at least 12 credit points from Intermediate units of study from the Science subject areas of Mathematics, Statistics, Physics or Chemistry;

(3) at least 48 credit points from Intermediate and Senior units of study in Psychology representing a major which must include PSYC (2111 or 2111), PSYC (2112 or 2112), PSYC (2113 or 2113) and PSYC (2114 or 2114). No other Intermediate Psychology units can be counted towards the major; and

(4) at least 48 credit points from prescribed Education units of study; *Years IV and V:*

- (1) honours in Psychology (or equivalent);
- (2) 16 credit points in School Counselling;
- (3) at least 16 credit points from prescribed Education units of study; and

(4) at least 16 credit points from the Science subject areas of Mathematics and Statistics, Physics or Chemistry.

Science/Nursing: Joint Resolutions

73. The term Bachelor of Nursing in these joint resolutions means either the Bachelor of Nursing (Pre-registration) or Bachelor of Nursing (Honours).

74. Candidates enrolled the Bachelor of Nursing by block mode are not eligible to undertake study in the combined degree course.

75. 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).

76. 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.

77. 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.

78. 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.

79. 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.

80. 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.

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

82. 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)

83. A student may proceed concurrently to the degrees of Bachelor of Applied Science (Exercise and Sport Science) and Bachelor of Science (Nutrition).

84. 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

5. Undergraduate degree regulations

- (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.
85. 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.
86. 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.
87. 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.
88. 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.
89. 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
90. A student may proceed through the degree of Bachelor of Science (Advanced) to the degrees of Bachelor of Medicine and Bachelor of Surgery.
91. 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 YAM 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.
92. Students who fail to satisfy 91 (2) and/or (3) will be transferred to candidature for the BSc(Advanced) degree.
93. 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 16 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.
94. 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.
95. 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.
96. Students may abandon the combined degree course and elect to complete the BSc (Advanced) degree.

97. 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.
98. 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.

Section 2

Enrolment in more/less than minimum load

99. 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

100. Where a student enrolls 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.

101. 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

102. 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

103. 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

104. 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

105. Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

106. 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).

107. 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

108. Credit will not be granted for units of study completed more than ten years prior to application, except with the permission of the Dean.

109. 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.

110. 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.

111. 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

112. (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

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 32 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.

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 enrolls, 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 Table III (i);
- (b) at least 36 credit points from Table III (iv) and/or Table 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 III(iv) and/or Table III(v) associated with the degree of Bachelor of Information Technology (or equivalent at another institution);

5. Undergraduate degree regulations

(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 58; 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 III(iv) and III(v), including INFO4991, INFO4992 and INFO4999.

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 11(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 enrolls 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, notwithstanding 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 32 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.

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 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 enrolls, 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 most 84 credit points are from Senior and/or Honours units.

(6) 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.

5. 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.

6. It is not necessary to complete the requirements of any major in order to qualify for the award of the degree.

7. 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.

8. 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

9. 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.

10. 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 III(iv) and/or III(v) associated with the degree of Bach-

5. Undergraduate degree regulations

elior 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 58; and
(4) satisfy any additional criteria set by the Head of Department concerned.

11. Once enrolled in the BIT (Honours) course, students shall complete the requirements for the honours course full-time, over two consecutive semesters.

12. 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.

13. 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 INFO4991, INFO4992 and INFO 4999, with a result of at least 65 in INFO4999.

14. 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.

15. The grade of honours and the honours mark are determined by performance in all Honours level units attempted.

16. 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.

17. 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.

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.

Transfer between the BIT and other degrees

19. 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.

20. 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

21. 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

22. Where a student enrolls 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.

Cross-institutional enrolment

24. 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

25. 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

26. 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

27. Students may be tested by written and oral examinations, exercises, essays or practical work or any combination of these as the Faculty may determine.

28. 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).

29. 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

30. Credit will not be granted for units of study completed more than ten years prior to application, except with the permission of the Dean.

31. 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.

32. 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.

33. 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.

34. (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 58 (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 YAM 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:

5. Undergraduate degree regulations

(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.

Section 2

Repeating a unit of study

30. Where a student enrolls 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

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 enrolls, 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, except with the permission of Faculty, with an average grade of Distinction or better;
- (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 SCIAM 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 enrolls 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 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).

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(1)(c)) at The University of Sydney.

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 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 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 enrolls, 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 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;
- (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 32 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 16 Senior credit points from a Part A subject area combined with no more than 16 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 W_c is the weighted credit point value - ie, 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 M_c 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.

Designated Streams - Bachelor of Liberal Studies (International)

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 32 credit points and a maximum of 64 credit points in total from designated 'Advanced' units of study
 - (b) include a maximum of 32 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.

5. Undergraduate degree regulations

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 64 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 enrolls 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 32 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.

Generic glossary for the BSc, BCST, BIT, BMedSc, BPsych, BLibStud

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 recognized 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 specialization 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 web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

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 (<http://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 (<http://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 applicant's 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.

For Faculty resolutions see chapter 7. For the Resolutions of the Senate see 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 master's degree or a bachelor's 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 bachelor's 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 student's 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 University's 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 (<http://www.usyd.edu.au/su/ab/committees/committees.html>).

Formal requirements

Number of copies to be submitted – MSc, 3; PhD, 4. 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 supervisor's 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 candidate's 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 Science's 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 examiner's tasks easier is obviously sensible.

Coursework/research degrees

Doctor of Clinical Psychology/Master of Science

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

6. Postgraduate degree requirements

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
<i>Year 1, Semester 1</i>		
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
<i>Year 1, Semester 2</i>		
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
<i>Year 2, Semester 1</i>		
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
<i>Year 2, Semester 2</i>		
PSYC 6018	Clinical Internship 4	3
PSYC 6031	Family Therapy	3
PSYC 6056	Advanced Seminars	6
PSYC 6062	Case Seminars 4	0
<i>Year 3, Semester 1</i>		
PSYC 6061	Clinical Internship and Case Seminars 5	0
<i>Year 3, Semester 2</i>		
PSYC 6058	Clinical Internship and Case Seminars 6	0

PSYC 6002 Psychological Assessment of Adults

6 credit points. 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. 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. 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. 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. 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. Dr Louise Sharpe. **Session:** Semester 2. **Prerequisites:** PSYC 6003.

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. Prof Stephen Touyz. **Session:** Semester 2. **Prerequisites:** PSYC 6029.

This unit of study will continue the seminars introduced in PSYC6029 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. 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. Dr Louise Sharpe. **Session:** Semester 1. **Prerequisites:** PSYC6008.

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. 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. 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. 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 6021 Advanced Seminars

0 credit points. Prof Stephen Touyz. **Session:** Semester 2.

Year 3 students will be required to attend three specialist seminars. Each seminar will be a workshop over two full days. Seminar topics may be: Schema focused Therapy, Interpersonal Therapy and Integrated approaches to Psychotherapy.

PSYC 6029 Case Seminars 1

3 credit points. 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. Dr Caroline Hunt. **Session:** Semester 2.

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. 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. 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.

6. Postgraduate degree requirements

PSYC 6051 **Adult Psychological Disorders**

6 credit points. 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. 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. 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. 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. Dr Caroline Hunt. **Session:** Semester 2.

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. 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. 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. 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

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 BLibStudies(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, Carlaw 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.

Unit of study		CP
<i>Year 1, Semester 1</i>		
PSYC 6002	Psychological Assessment of Adults	6
PSYC 6004	Ethics and Professional Practice	3
PSYC 6005	Research 1	3
PSYC 6034	Neuropsychology Clinical Internship 1	3
PSYC 6040	Neuropsychology Case Seminars 1	3
PSYC 6052	Adult Neuropsychological Disorders	6
<i>Year 1, Semester 2</i>		
PSYC 6007	Psychological Assessment of Children	6
PSYC 6010	Research 2	3
PSYC 6030	Paediatric Neuropsychological Disorders	6
PSYC 6035	Neuropsychology Clinical Internship 2	3
PSYC 6041	Neuropsychology Case Seminars 2	3
PSYC 6053	Developmental Disorders	3
<i>Year 2, Semester 1</i>		
PSYC 6015	Research 3	3
PSYC 6033	Issues in Rehabilitation	3
PSYC 6036	Neuropsychology Clinical Internship 3	3
PSYC 6042	Neuropsychology Case Seminars 3	3
PSYC 6046	Seminars in Clinical Neuropsychology	3
PSYC 6051	Adult Psychological Disorders	6
PSYC 6054	Adult Neuropsychopathology	3
<i>Year 2, Semester 2</i>		
PSYC 6037	Neuropsychology Clinical Internship 4	3
PSYC 6047	Seminars in Clinical Neuropsychology Adv	3
PSYC 6048	Neuroanatomy	6
PSYC 6063	Neuropsychology Case Seminars 4	0
<i>Year 3, Semester 1</i>		
PSYC 6059	Neuropsychology Internship & Seminars 5	0
<i>Year 3, Semester 2</i>		
PSYC 6060	Neuropsychology Internship & Seminars 6	0

PSYC 6030 Paediatric Neuropsychological Disorders

6 credit points. Dr Suncica Sunny Lah. **Session:** Semester 2. **Prerequisites:** PSYC6052. This unit will familiarise students with core neurobehavioural issues of medical conditions affecting the central nervous system in children. Principles and factors that influence the outcome in a developing organism, such as the state of CNS development, psychological/cognitive maturity at the time of insult, plasticity (vulnerability) and impact of the child's environment will be discussed in a range of disorders. In addition to research findings a number of clinical case presentations will be discussed.

PSYC 6033 Issues in Rehabilitation

3 credit points. Dr Diana Caine. **Session:** Semester 1. This course will cover theories of recovery from brain damage from a variety of causes; models of rehabilitation; management of the behavioural consequences of neuropsychological disorders including behaviour modification and environmental manipulation strategies;

working in a multidisciplinary team; rehabilitation in the context of acute and chronic neuropsychological disorders.

PSYC 6034 Neuropsychology Clinical Internship 1

3 credit points. Dr Diana Caine. **Session:** Semester 1.

This unit of study is designed to introduce interns to the work of clinical psychologists. Interns will be rotated through the Psychology Clinic and Clinics at Royal Prince Alfred, and Westmead Hospitals to observe Clinical Neuropsychologists and Clinical Psychologists in practice. The internship will expose Interns to a range of clients with different needs.

PSYC 6035 Neuropsychology Clinical Internship 2

3 credit points. Dr David Horry. **Session:** Semester 2. **Prerequisites:** PSYC6034.

This course is designed to introduce interns to neuropsychological assessment skills and therapy specifically with adults. Interns will be allocated in pairs to a supervisor who will oversee their clinical practice closely. This internship will expose Interns to clients with

6. Postgraduate degree requirements

neuropsychological problems in the mild clinical range including mild head injury, questionable neurodegenerative disease, and adult learning disabilities. The internship is aimed at building Intern's confidence in working with adult clients. Students will learn to develop hypotheses about cognitive disorders, select appropriate tests, and conduct and interpret test results in the form of clinical case reporting.

PSYC 6036 Neuropsychology Clinical Internship 3

3 credit points. Dr Suncica Sunny Lah. **Session:** Semester 1. **Prerequisites:** PSYC6035. This unit is designed to introduce new Interns to neuropsychological assessment in relation to young people and their families. Interns will be allocated to a supervisor in pairs. The internship will allow students to develop skills in the formulation of hypotheses about the nature of the disorder, select appropriate tests to undertake examination of the child, interpret the test results, formulate a diagnosis and communicate the outcome of the assessment to the client, their families and schools, as appropriate.

PSYC 6037 Neuropsychology Clinical Internship 4

3 credit points. Dr Diana Caine. **Session:** Semester 2. **Prerequisites:** PSYC6036. Students will undertake clinical internships in a variety of hospital settings with a view to developing skills and expertise in the conduct of neuropsychological assessments. This internship is designed to consolidate Intern's clinical and diagnostic skills.

PSYC 6040 Neuropsychology Case Seminars 1

3 credit points. Dr Suncica Sunny Lah. **Session:** Semester 1. This course introduces students to history taking, data interpretation, and differential diagnosis in a neuropsychology setting. It will comprise a 1-hour weekly seminar at which students will observe senior students, staff and clinicians in the field presenting neuropsychological case material. These clinical case conferences will allow students to recognise a wide range of neuropsychological diagnoses, the interrelationships between neuropsychological, neurological and psychiatric symptomatology.

PSYC 6041 Neuropsychology Case Seminars 2

3 credit points. Dr Diana Caine. **Session:** Semester 2. **Prerequisites:** PSYC6040. This course description is the same as in Neuropsychology Case Seminars 1.

PSYC 6042 Neuropsychology Case Seminars 3

3 credit points. Dr Suncica Sunny Lah. **Session:** Semester 1. **Prerequisites:** PSYC6041. These units of study build upon the previous semesters.

PSYC 6046 Seminars in Clinical Neuropsychology

3 credit points. Dr Diana Caine. **Session:** Semester 1. Year 2 students will be required to attend specialist seminars. There will be no formal assessment of these units but attendance is obligatory.

PSYC 6047 Seminars in Clinical Neuropsychology Adv

3 credit points. Dr Diana Caine. **Session:** Semester 2. Year 2 students will be required to attend specialist seminars. There will be no formal assessment of these units but attendance is obligatory.

PSYC 6048 Neuroanatomy

6 credit points. Dr Vladimir Balcar. **Session:** Semester 2. The lectures and tutorials will provide a general overview of human neuroanatomy, of the structure and function of the brain systems being considered, and the opportunity to learn to identify those structures.

PSYC 6052 Adult Neuropsychological Disorders

6 credit points. Dr Diana Caine. **Session:** Semester 1. This unit provides a comprehensive introduction to cognitive, behavioural and emotional correlates of neurological disorders. Students will be introduced to a theoretical approach to the principal cognitive domains - memory, language, visual cognition, attention and executive function, and emotive - and their neuroanatomical substrates. This will provide the conceptual framework for consideration of a number of major neuropsychological conditions including amnesic disorders, visual agnosias, visuospatial disturbances including hemi-inattention, problems with language, and disorders of attention and executive function. Each lecture will take the format of a theoretical component accompanied by illustrative case studies.

PSYC 6059 Neuropsychology Internship & Seminars 5

0 credit points. Dr Diana Caine. **Session:** Semester 1.

This unit of study, following on from PSYC6037 Neuropsychology Clinical Internship 4, is designed to build on the clinical skills of students in further areas of practice and interns will be expected to work with a greater level of independence. Students will undertake clinical internships with a view to developing skills and expertise in the conduct of neuropsychological assessments in a variety of clinical settings. For these external internships, interns will have the choice of a variety of internships in the community or hospital setting. Internships will be developed in major teaching hospitals and rehabilitation settings. A training plan will be developed for each intern and allocations will be made on the basis of that training plan. This unit of study will also build upon previous units of study by students presenting a case in the Neuropsychology Case Seminars.

PSYC 6060 Neuropsychology Internship & Seminars 6

0 credit points. Dr Diana Caine. **Session:** Semester 2. This unit of study, following on from PSYC6059 Neuropsychology Internship & Seminars 5, is designed to build on the clinical skills of students in further areas of practice and interns will be expected to work with a greater level of independence. Students will undertake clinical internships with a view to developing skills and expertise in the conduct of neuropsychological assessments in a variety of clinical settings. For these external internships Interns will have the choice of a variety of internships in the community or hospital setting. Internships will be developed in major teaching hospitals and rehabilitation settings. A training plan will be developed for each intern and allocations will be made on the basis of that training plan. This unit of study will also build upon previous units of study by students presenting a case in the Neuropsychology Case Seminars.

PSYC 6063 Neuropsychology Case Seminars 4

0 credit points. Dr Diana Caine. **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.

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 graduates with subsequent experience which is considered to demonstrate the knowledge and aptitude required to undertake the course.

Course Requirements

To qualify for 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).

Note: Law units of study are taught in intensive mode. Contact the Faculty of Law.

Unit of study	
Unless otherwise indicated, all units are worth 6 credit points	
<i>Core units</i>	
LAWS 6252	Legal Reasoning & Common Law System
LAWS 6044	Environmental Law and Policy
<i>Science Units (* = recommended)</i>	
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
ENVI 5901	Weathering Processes and Applications
GEOG 5001	Geographic Information Systems (Introduction)
GEOG 5002	Geographic Information Systems (Advanced)
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
<i>Law units (# = offered every second year)</i>	
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

LAWS 6044 Environmental Law and Policy

6 credit points. Dr Gerry Bates. **Session:** S1 Late Int, S2 Intensive. **Corequisites:** MEL, GradDipEnvL and MEnvSciLaw candidates without a legal qualification must have completed or are currently enrolled in the compulsory unit LAWS6252 Legal Reasoning and the Common Law System prior to undertaking law units. **Assessment:** two 4000 wd essays (50% each).

NB: MEL, GradDipEnvL and MEnvSciLaw candidates must enrol in this compulsory unit prior to or concurrently enrolling in law units

The aim of the unit is to introduce students 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. Ms Nicola Franklin. **Session:** Semester 1. **Corequisites:** Candidates enrolled in the MEL, GradDipEnvLaw and MEnvSciLaw must undertake LAWS6044 Environmental Law and Policy; and LAWS6252 Legal Reasoning and the Common Law System (candidates who do not hold a legal qualification).. **Assessment:** one 4000w essay (50%), problem-based 4000 wd 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 per-

6. Postgraduate degree requirements

spectives 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 students 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. Professor Ben Boer. **Session:** S1 Late Int, S2 Intensive. **Classes:** Semester 1 late intensive classes are held at the Sydney Law School. Semester 2 intensive unit will be held at the Australian Centre Europe in Berlin. See information regarding the Sydney LL.M in Europe at <http://www.law.usyd.edu.au/LLMinEurope/>. **Corequisites:** Candidates enrolled in the MEL, GradDipEnvLaw and MenVSciLaw must undertake LAWS6044 Environmental Law and Policy; and LAWS6252 Legal Reasoning and the Common Law System (candidates who do not hold a legal qualification) prior to enrolling in other law units.. **Assessment:** one problem based 2500 wd assignment (30%), one 5500wd essay (70%).

NB: Department permission required for enrolment.

This unit aims to provide students 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. Ms Nicola Franklin (Convenor), Dr Gerry Bates. **Session:** S2 Late Int. **Corequisites:** Candidates enrolled in the MEL, GradDipEnvLaw and MenVSciLaw must undertake LAWS6044 Environmental Law and Policy; and LAWS6252 Legal Reasoning and the Common Law System (candidates who do not hold a legal qualification). GradDipPubHL (will be offered subject to University approval) candidates must also undertake LAWS6252 Legal Reasoning and the Common Law System prior to undertaking other units.. **Assessment:** one problem based 4000wd assignment (50%), 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. Mr Brian Preston. **Session:** S2 Late Int. **Corequisites:** Candidates enrolled in the MEL, GradDipEnvLaw and MenVSciLaw must undertake LAWS6044 Environmental Law and Policy; and LAWS6252 Legal Reasoning and the Common Law System (candidates who do not hold a legal qualification).. **Assessment:** one 8000 wd research paper (100%) due on Friday 19 November 2004.

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.

Textbooks

A book of reading materials and a field trip manual will be prepared and distributed.

LAWS 6191 Water Law

6 credit points. Ms Rosemary Lyster. **Session:** S2 Late Int. **Corequisites:** Candidates enrolled in the MEL, GradDipEnvLaw and MenVSciLaw must undertake LAWS6044 Environmental Law and Policy; and LAWS6252 Legal Reasoning and the Common Law System (candidates who do not hold a legal qualification).. **Assessment:** one 7000wd essay (80%), 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. Associate Professor Barbara McDonald. **Session:** S1 Intensive, S2 Intensive. **Corequisites:** Candidates must have completed or be concurrently enrolled in this unit before being permitted to enrol in other law units.. **Assessment:** Two practical assignments, each worth 30%, one dealing with analysis of a case, the other, analysis of a statute. The remaining 40% will be attached to an assignment, comprised of short-answer questions, covering issues raised by the material on constitutional law, administrative law, contracts and torts.

NB: This is not a compulsory unit for MBL candidates. But MBL candidates enrolling in units from the Tax Program and do not have a qualification in accountancy or who have not completed a legal studies unit as part of a degree in business or commence within a common law jurisdiction will be required to complete this unit.

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 students 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. Professor Patricia Apps. **Session:** S2 Late Int. **Corequisites:** MALP candidates without a legal qualification must have completed or are concurrently enrolled in the compulsory unit LAWS6252 Legal Reasoning and the Common Law System prior to undertaking other law units. **Assessment:** research essay (80%), problem-based assignments and class presentation of a case study (20%).

NB: Compulsory unit for MALP candidates

The aim of this unit is to provide an understanding of the role of government in a market economy and of the need for intervention in a wide range of policy areas, defined within the framework of welfare economics. Particular attention is given to the analysis of taxation, social insurance and regulation. Applications include detailed studies of policy issues central to the following:

- The Australian tax-benefit system
- Unemployment, health and retirement income insurance
- Environmental taxes, tradable permits and regulation
- Monopoly regulation and access pricing
- Intergenerational equity and growth

The unit also provides a brief overview of empirical methodologies used in evaluating policy reforms in these 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. Jason Grossman. **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:** Five short written assignments, seminar participation. **NB:** Department permission required for enrolment.

This unit explores the relationships between scientific theories and evidence, and the relationships between scientific theories and other scientific theories. Philosophical analyses are compared with examples of actual practice in physical and biological sciences.

Textbooks

Blackburn S., The Oxford Dictionary of Philosophy, and course reader.

HPSC 4102 History of Science

6 credit points. 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.

This unit explores major episodes in the history of science as well as introducing students to historiographic methods.

Textbooks

Course reader

HPSC 4103 Sociology of Science

6 credit points. Dr Hans Pols. **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:** Essays, fieldwork report, seminar participation mark. **NB:** Department permission required for enrolment.

This course builds upon earlier courses introducing the sociology of science with an exploration of recent approaches in the social studies of scientific knowledge. Specific topics include the 'strong program', sociologists of knowledge and their critique of traditional philosophy of science, the counter-arguments of philosophers, anthropological approaches to science such as ethnomethodology and 'actor-network' theory, and sociology of technology. Students evaluate the approaches by conducting their own research on specific cases.

Textbooks

Course reader

HPSC 4104 Recent Topics in HPS

6 credit points. 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.

An examination of one area of the contemporary literature in the history and philosophy of science.

Textbooks

Course reader

HPSC 4105 HPS Research Methods

6 credit points. Dr Rachel Ankeny. **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:** Literature review, archival research project, seminar participation mark, short essays. **NB:** Department permission required for enrolment.

An introduction to the research skills of history, philosophy and sociology of science. Students will learn to be conscious of their own introductions of interpretations, arguments and theories into their research and writing through comparative study of different schools in contemporary HPS.

Textbooks

Course reader

HPSC 4108 Core topics: History & Philosophy of Sci

6 credit points. HPS staff. **Session:** Winter, 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. **Assessment:** Essays, seminar presentations, seminar participation mark.

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

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 areas 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

COMP 5028 Object-Oriented Analysis and Design

6 credit points. **Session:** Semester 1, Semester 2. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assignments, written exam.

NB: Department permission required for enrolment.

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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 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. **Session:** Summer, Semester 1, Semester 2. **Classes:** 2 lectures and 1 tutorial/week. **Assessment:** Assignments, written examination.

NB: Department permission required for enrolment.

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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assessment:** Assignments, written exam.

NB: Department permission required for enrolment.

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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec & 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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec & 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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec & 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
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, Multimedia, Database Management and Administration, Software Engineering, Business Information Systems, Project Management, 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 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 requires 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:

- A total of 24 credit points must be completed;
- Credit points can be selected from Foundational and Specialist units of study, excluding INFO5590 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 INFO5590 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 MInfTech are not permitted to transfer to the Master of Applied Information Technology course.

Course Resolutions: see chapter 7.

Units of study available in 2005

The units of study change annually.

Unit of study		Sem
Unless otherwise indicated, all units are worth 6 credit points		
<i>Foundational units</i>		
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	1,2
<i>Specialist units</i>		
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	1,2
COMP 5415	Multimedia Authoring and Production	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
INFO 6007	Project Management in IT	1
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
INFS 6001	Management Information Systems	1,2
INFS 6002	Information Technology Strategy and Mgmt	1,2
INFS 6004	Change Agent Consulting for IT Industry	1
INFS 6012	Integrated Enterprise Systems	1
INFS 6013	IT Risk Management and Assurance	2
INFS 6014	IT Project Management	2
INFS 6015	Business Process Analysis and Design	2
INFS 6016	Internet Business Models and Strategies	2
INFS 6017	Knowledge Management	1
MATH 4431	Advanced Option Pricing	1
MATH 4433	Interest Rate Modelling	2
<i>IT project units</i>		
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 2005

Majors are not defined for the Graduate Certificate or for the Graduate Diploma in Information Technology.

<i>Core Units for Computer Networks major</i>		
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. <i>Unless otherwise indicated, all units are worth 6 credit points.</i>		
COMP 5416	Advanced Network Technologies	
COMP 5426	Network Based High Performance Computing	
COMP 5703	Information Technology Project (12 cp)	
<i>Only available to the Research path:</i>		
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 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.*

6. Postgraduate degree requirements

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)
<i>Only available to the Research path:</i>	
COMP 5702	IT Research Project A (12 cp)
COMP 5704	IT Research Project B
<i>(COMP 5702 + COMP 5704 = 18 cp)</i>	

<i>Core Units for E-Business Technologies major</i>	
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. <i>Unless otherwise indicated, all units are worth 6 credit points</i>	
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 and Strategies
COMP 5703	Information Technology Project (12 cp)
<i>Only available to the Research path:</i>	
COMP 5702	IT Research Project A (12 cp)
COMP 5704	IT Research Project B
<i>(COMP 5702 + COMP 5704 = 18 cp)</i>	

<i>Core Units for Business Information Systems major</i>	
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. <i>Unless otherwise indicated, all units are worth 6 credit points.</i>	
INFS 6001	Management Information Systems
INFS 6002	Information Technology Strategy and Mgmt
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)
<i>Only available to the Research path:</i>	
COMP 5702	IT Research Project A (12 cp)
COMP 5704	IT Research Project B
<i>(COMP 5702 + COMP 5704 = 18 cp)</i>	

<i>Core Units for Financial Modelling major</i>	
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. <i>Unless otherwise indicated, all units are worth 6 credit points.</i>	
MATH 4431	Advanced Option Pricing
MATH 4433	Interest Rate Modelling
COMP 5703	Information Technology Project (12 cp)
<i>Only available to the Research path:</i>	
COMP 5702	IT Research Project A (12 cp)
COMP 5704	IT Research Project B
<i>(COMP 5702 + COMP 5704 = 18 cp)</i>	

<i>Core Units for Project Management major</i>	
To achieve a major in Project Management, 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. INFO6007 and INFS6014 are mutually exclusive, and students can take only one of these two units of study. <i>Unless otherwise indicated, all units are worth 6 credit points.</i>	
INFS 6001	Management Information Systems
INFS 6002	Information Technology Strategy and Mgmt
INFS 6014	IT Project Management
INFO 6007	Project Management in IT
COMP 5703	Information Technology Project (12 cp)
<i>Only available to the Research path:</i>	

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 5028 Object-Oriented Analysis and Design

6 credit points. **Session:** Semester 1, Semester 2. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assignments, written exam.

NB: Department permission required for enrolment.

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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 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. **Session:** Summer, Semester 1, Semester 2. **Classes:** 2 lectures and 1 tutorial/week. **Assessment:** Assignments, written examination.

NB: Department permission required for enrolment.

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. **Session:** Summer, Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assessment:** Assignments, written exam.

NB: Department permission required for enrolment.

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.

INFS 6000 Business Information Systems

6 credit points. **Session:** Semester 1, Semester 2.

This unit will help you understand how information is used to meet organisational objectives; the complex and changing information environment from the perspective of stakeholders; and the management issues associated with making effective use of information technology capabilities. These are explored with reference to enter-

prise-wide systems and small to medium systems in business and government. You will use conceptual frameworks and systems documentation tools to analyse practical problems in the operations of information systems. You will become familiar with business cycles; data and data structures as a corporate resource; core business processes, governance and controls; and reports for management decision making.

MATH 4421 Mathematical Foundations for Finance

6 credit points. **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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec & 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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assumed Knowledge:** COMP5138 Relational Database Management Systems. **Assessment:** Assignments, written exam.

NB: Department permission required for enrolment.

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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec & 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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assumed Knowledge:** COMP5028 Object Oriented Analysis and Design and COMP5148 Quality Software Development in Practice. **Assessment:** Assignments, exam.

NB: Department permission required for enrolment.

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.

6. Postgraduate degree requirements

COMP 5415 **Multimedia Authoring and Production**

6 credit points. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assumed Knowledge:** COMP5114 Digital Media Fundamentals. **Assessment:** Assignments, written exam.

NB: Department permission required for enrolment.

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 5416 **Advanced Network Technologies**

6 credit points. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assumed Knowledge:** COMP5116 Internet Protocols and COMP5126 Distributed Systems Programming. **Assessment:** Assignments, written exam.

NB: Department permission required for enrolment.

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 5425 **Multimedia Storage, Retrieval & Delivery**

6 credit points. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assumed Knowledge:** COMP 5122 Multimedia Human Computer Interaction. **Assessment:** Assignments, written exam.

NB: Department permission required for enrolment.

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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assumed Knowledge:** COMP5126 Distributed Systems Programming. **Assessment:** Assignments, written exam.

NB: Department permission required for enrolment.

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.

INFO 4990 **IT Research Methods**

6 credit points. **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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assessment:** Assignments, written exam.

NB: Department permission required for enrolment.

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 expecta-

tions 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 6007 **Project Management in IT**

6 credit points. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assumed Knowledge:** INFS6000. **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.

ELEC 5303 **Computer Control System Design**

6 credit points. **Session:** Semester 1. **Classes:** 2 hours of lectures and a 2 hour lab/tutorial per week. **Assumed Knowledge:** ELEC3302 Fundamentals of Feedback Control or ELEC 3304 Control or MECH3800 Systems Control or AMME3500 System Dynamics and Control. **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. **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). **Assessment:** Assignments 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: IEEE802.11, Hiperlan, Bluetooth. Convergence: GSM evolution to data services via GPRS and EDGE. Issues with TCP over wireless. Mobility management in MobileIP.

ELEC 5509 **Advanced Communication Networks**

6 credit points. **Session:** Semester 1. **Classes:** 2 hours of lectures 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. **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. **Session:** Semester 2. **Classes:** 2 hours of lectures and a 1 hour tutorial per week. **AssumedKnowledge:** ELEC3505 Communications (or ELEC3503 Introduction to Digital Communications) and ELEC4505 Digital Communication Systems (or ELEC4502 Digital Communication Systems). **Assessment:** Class performance 5%, tutorial attendance 5%, assignment 20%, 2 hour 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. **Session:** Semester 1. **Classes:** 2 hours of lectures and a 2 hour lab/tutorial per week. **AssumedKnowledge:** (ELEC3503 Introduction to Digital Communications or ELEC3505 Communications) and (ELEC3402 Communications Electronics or ELEC3405 Communications Electronics and Photonics). **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 5512 Optical Networks

6 credit points. **Session:** Semester 2. **Classes:** 2 hours of lectures and a 1 hour lab/tutorial per week. **AssumedKnowledge:** ELEC3506 Data Communications and the Internet or ELEC3505 Communications. **Assessment:** Two assignments totalling 20%, end of semester exam 80%.

Introduction, photonic network architectures: point to point, star, ring, mesh; system principles: modulation formats, link budgets, optical signal to noise ratio, dispersion, error rates, optical gain and regeneration; wavelength division multiplexed networks; WDM components: optical filters, gratings, multiplexers, demultiplexers, wavelength routers, optical crossconnects, wavelength converters, WDM transmitters and receivers; Wavelength switched/routed networks, ultra high speed TDM, dispersion managed links, soliton systems; broadcast and distribution networks, multiple access, sub-carrier multiplexed lightwave video networks, optical local area and metropolitan area networks; protocols for photonic networks: IP, Gbit Ethernet, SDH/SONET, FDDI, ATM, Fibre Channel.

ELEC 5513 Network Management and Queuing Theory

6 credit points. **Session:** Semester 2. **Classes:** 2 hours of lectures and a 2 hour tutorial per week. **AssumedKnowledge:** 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. **Session:** Semester 2. **Classes:** 2 hours of lectures, 2 hours of labs and a 1 hour tutorial per week. **AssumedKnowledge:** SOFT2130 Software Construction (or SOFT2004 Software Development Methods 1) and ELEC3607 Embedded Computing (or ELEC2601 Microprocessor Systems). **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. **Session:** Semester 2. **Classes:** 2 hours of lectures and a 2 hour tutorial per week. **AssumedKnowledge:** ELEC4605 Computer Engineering or ELEC4601 Computer Design. **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. **Session:** Semester 1. **Classes:** 2 hours of lectures and a 2 hour lab/tutorial per week. **AssumedKnowledge:** ELEC3607 Embedded Computing (or ELEC2601 Microprocessor 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). **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.

INFS 6001 Management Information Systems

6 credit points. **Session:** Semester 1, Semester 2. **Prerequisites:** 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 Information Technology Strategy and Mgmt

6 credit points. **Session:** Semester 2. **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 Change Agent Consulting for IT Industry

6 credit points. **Session:** Semester 1. **AssumedKnowledge:** INFS6000.

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 Integrated Enterprise Systems

6 credit points. **Session:** Semester 1. **AssumedKnowledge:** INFS6010 OR COMP5015 (Relational Database Systems) OR COMP5215 (Foundational Database Systems). **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 IT Risk Management and Assurance

6 credit points. **Session:** Semester 2. **AssumedKnowledge:** INFS6000.

This unit will introduce you to the concepts, tools and techniques that will help you effectively manage and control the acquisition, implementation and operation of information systems. A risk management framework will familiarize you with the requirements and potential risks of each stage of the information system lifecycle and you will learn how the application of appropriate quality standards and internal controls can serve to mitigate those risks. The theoretical and conceptual material covered in lectures will be reinforced through extensive case study analysis. You will be exposed to the specific requirements of information systems for different organisational functions and introduced to auditing approaches and standards to ensure that processes and controls are effective.

INFS 6014 IT Project Management

6 credit points. **Session:** Semester 2. **Prerequisites:** INFS6000.

This unit will introduce you to the factors necessary for the successful management of system development or enhancement projects. Attention will be given to both technical and behavioural aspects of project management with a focus on management of system development projects. Your knowledge and capabilities will be expanded in: project plan development; execution and control, with consideration of the organisational context of the project, including cost-benefit analysis; human resource management; communications management and other application specific issues.

INFS 6015 Business Process Analysis and Design

6 credit points. **Session:** Semester 2. **Classes:** 4 hours (lecture/workshop). **Prerequisites:** INFS6000. **Assessment:** Individual assignment; Group assignment; mid-semester exam; final exam.

This unit will provide you with an overview of the design, analysis, modelling and redesign of business processes. It will help you understand and apply concepts, strategies, tools and technologies required for the reengineering, integration, and performance measurement of business processes. You will gain practical experience in modelling and redesigning business processes and workflows using commercial software and you will learn how to develop a fully process-managed enterprise.

INFS 6016 Internet Business Models and Strategies

6 credit points. **Session:** Semester 2. **Prerequisites:** INFS6000.

In this unit, you will develop knowledge and skills in Electronic Commerce business models and strategies from a management perspective. The unit will enable you to better understand and apply

the concepts, strategies, tools and technologies necessary for undertaking business over the Internet. Working from a 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. You will gain insights into the technology and infrastructure required to support Internet commerce and develop your capacity to analyze and evaluate business strategies and models.

INFS 6017 Strategic Information and Knowledge Mgmt

6 credit points. **Session:** Semester 1. **Prerequisites:** INFS6000.

In this unit, you will be exposed to a social informatics approach 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 organizations 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. **Session:** Semester 1. **Classes:** Lectures/tutorials : 3 hrs per week in total. **AssumedKnowledge:** 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. **Session:** Semester 2. **Classes:** Lectures/tutorials : 3 hrs per week in total. **AssumedKnowledge:** 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 the Heath-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. **Session:** Semester 1, Semester 2. **Classes:** 8 prac/wk. **Assessment:** Report.

NB: Department permission required for enrolment.
Specialist/Elective/Project

COMP 5703 Information Technology Project

12 credit points. **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. **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
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 2005

The units of study offered change annually.

Unit of study		Sem
Unless otherwise indicated, all units are worth 6 credit points		
<i>Elementary Units</i>		
COMP 5211	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
<i>Foundational units</i>		
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
<i>Specialist units</i>		
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
<i>IT project units</i>		
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 2005

Majors are not defined for the Graduate Certificate or the Graduate Diploma in Applied Information Technology.

<i>Core Units for Computer Networks major</i>		
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. <i>Unless otherwise indicated, all units are worth 6 credit points.</i>		
COMP 5416	Advanced Network Technologies	
COMP 5426	Network Based High Performance Computing	
COMP 5703	Information Technology Project (12 cp)	
<i>Only available to the Research path:</i>		
COMP 5702	IT Research Project A (12 cp)	
COMP 5704	IT Research Project B	
<i>(COMP 5702 + COMP 5704 = 18 cp)</i>		

<i>Core Units for Multimedia Technology major</i>		
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. <i>Unless otherwise indicated, all units are worth 6 credit points.</i>		
COMP 5415	Multimedia Authoring and Production	
COMP 5425	Multimedia Storage, Retrieval & Delivery	
COMP 5703	Information Technology Project (12 cp)	
<i>Only available to the Research path:</i>		
COMP 5702	IT Research Project A (12 cp)	
COMP 5704	IT Research Project B	
<i>(COMP 5702 + COMP 5704 = 18 cp)</i>		

<i>Core Units for Database Management Systems major</i>		
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. <i>Unless otherwise indicated, all units are worth 6 credit points.</i>		
COMP 5338	Advanced Data Models	
COMP 5318	Knowledge, Discovery and Data Mining	
COMP 5703	Information Technology Project (12 cp)	
<i>Only available to the Research path:</i>		

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. <i>Unless otherwise indicated, all units are worth 6 credit points.</i>	
COMP 5347	e-Commerce Technology
COMP 5348	Enterprise Scale Software Development
COMP 5703	Information Technology Project (12 cp)
<i>Only available to the Research path:</i>	
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. <i>Unless otherwise indicated, all units are worth 6 credit points.</i>	
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)
<i>Only available to the Research path:</i>	
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

Elementary units

COMP 5206 Introduction to Information Systems

6 credit points. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assessment:** Assignments, written exam.

NB: Department permission required for enrolment.

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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec & 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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec & 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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec & 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.

Medical Physics

Graduate Diploma in Medical Physics

Master of Medical Physics

Course overview

The Master of Medical Physics provides the entry qualification for a medical physicist working in a hospital and is accredited by the Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM). The degree consists of eight coursework units of study (which by themselves constitute the Graduate Diploma) plus a substantial project, which would usually be undertaken in a hospital.

Course outcomes

A graduate of the Masters program will be a qualified medical physicist according to the criteria set down by ACPSEM and will be eligible to apply for medical physicist positions in hospitals in Australia and New Zealand. A graduate of the Graduate Diploma would not be a qualified medical physicist, but will have acquired the same knowledge and practical skills base. Upon completion of the Graduate Diploma, this can be extended to include research and further practical skills by completion of the Masters program.

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

6. Postgraduate degree requirements

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

Medical Physics units of study

PHYS 5001 Radiation Physics

6 credit points. **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. **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. **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. **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. **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. **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. **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. **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. **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. **Session:** Semester 1, Semester 2. **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 institution and have completed two full semesters in both Biochemistry and Human Physiology. For example, a student who completed a BSc at Sydney should have studied BCHM 2001 (or MBLG 2001) and BCHM 2002 and PHSI 2001 and PHSI 2002. A student who has completed a BMedSc should have completed the second year of the program. These subjects are required by the Dietitians Association of Australia.

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
<i>Year 1, Semester 1</i>		
NTDT 5301	Nutritional Science	8
NTDT 5302	Food Science	4
NTDT 5303	Dietary Intake & Nutritional Assessment	4
NTDT 5304	Principles of Dietetic Practice	2
NTDT 5305	Food Service Management	6
<i>Year 1, Semester 2</i>		
NTDT 5307	Clinical Nutrition and Dietetics	12
NTDT 5308	Community and Public Health Nutrition	10
NTDT 5309	Communication	2
<i>Year 2, Semester by arrangement</i>		
NTDT 5310	Nutrition Research Project	24
NTDT 5311	Nutrition Practice	12
NTDT 5312	Nutrition & Dietetics Training Placement	12

NTDT 5301 Nutritional Science

8 credit points. A/Prof Samir Samman. **Session:** Semester 1.

The study of biochemical interrelationships between nutrients, energy supply and modification of metabolism by disease; the study of the macronutrients ie, protein, fat, carbohydrate, energy and the micronutrients ie vitamins and minerals.

NTDT 5302 Food Science

4 credit points. Prof. J Brand-Miller. **Session:** Semester 1.

The study of nutritional content, production and consumption of major foods, and the study of principles of food preservation, processing, safety and microbiology.

NTDT 5303 Dietary Intake & Nutritional Assessment

4 credit points. Dr Karen Webb. **Session:** Semester 1.

The study of methodology for assessing dietary intake and nutritional status.

NTDT 5304 Principles of Dietetic Practice

2 credit points. Dr D Volker. **Session:** Semester 1.

The study of knowledge and skills of professional dietetic conduct.

NTDT 5305 Food Service Management

6 credit points. 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. 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. 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. 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. 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. 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. 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.

Nutrition Research Project units

The following units of study are for students have completed the DipNutrDiet and are upgrading to the MNutrDiet.

NTDT 5321 Nutrition Research Project (Full-Time)24 credit points. **Session:** Semester 1, Semester 2.

This unit of study is for full-time students upgrading from the DipNutrDiet to the MNutrDiet, and it involves completing a research project.

NTDT 5322 Nutrition Research Project A12 credit points. **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 B12 credit points. **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.

Unit of study		Credit points
<i>Year 1, Semester 1</i>		
NTDT 5301	Nutritional Science	8
NTDT 5302	Food Science	4
NTDT 5303	Dietary Intake & Nutrition	4
NTDT 5304	Principles of Dietetic Practice	2
NTDT 5306	Introduction to Food Service	3
NTDT 5315	Scientific Methodology in Nutrition	3
<i>Year 1, Semester 2</i>		
NTDT 5307	Clinical Nutrition & Dietetics	12
NTDT 5308	Community & Public Health	10
NTDT 5309	Communication	2
<i>Year 2</i>		
NTDT 5313	Nutritional Science Research A	24
NTDT 5314	Nutritional Science Research B	24

NTDT 5306 Introduction to Food Service3 credit points. Ms Maria Kokkinakos. **Session:** Semester 1.

An introduction to food service systems in institutions.

NTDT 5315 Scientific Methodology in Nutrition3 credit points. A/Prof Samir Samman. **Session:** Semester 1.

A small report on the desired area of research in year 2.

NTDT 5313 Nutritional Science Research A24 credit points. **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 B24 credit points. **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

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).

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.

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 2111, 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 3201 Statistics and Psychometrics for entry to the Graduate Diploma in Science (Psychology) and both PSYC 3201 Statistics and Psychometrics and PSYC 3202 History of Philosophy of Psychology for entry to Psychology 4 (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
- PSYC 2012 Statistics & Research Methods for Psych
- PSYC 2013 Cognitive and Social Psychology
- PSYC 2014 Personality and Differential Psychology
- PSYC 3201 Statistics and Psychometrics
- PSYC 3202 History and Philosophy of Psychology
- PSYC 3203 Abnormal Psychology
- PSYC 3204 Behavioural Neuroscience
- PSYC 3205 Cognition, Language and Thought
- PSYC 3206 Developmental Psychology
- PSYC 3209 Learning and Motivation
- PSYC 3210 Perceptual Systems
- PSYC 3211 Psychological Assessment and Organisational
- PSYC 3212 Social Psychology
- PSYC 3214 Communication and Counselling
- PSYC 3215 Cognitive Neuroscience & Neuropsychology
- PSYC 3216 Health and Safety Psychology Principles

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.

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		
<i>Semester 1 Core units – 24 credit points</i>		
PSYC 4500	Research Project (A)	10
PSYC 4501	Psychological Research Methods	8
PSYC 4503	Special Fields Topic (A)	6
<i>Semester 2 Core units – 24 credit points</i>		
PSYC 4505	Research Project (B)	10
PSYC 4502	Ethics and Current Issues in Psychology	2
<i>Semester 2 Optional units of study (select 2 electives)</i>		

6. Postgraduate degree requirements

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		
<i>Year 1, Semester 1 – 18 credit points</i>		
PSYC 4500	Research Project (A)	10
PSYC 4501	Psychological Research Methods	8
<i>Year 1, Semester 2 – 12 credit points</i>		
PSYC 4505	Research Project (B)	10
PSYC 4502	Ethics	2
<i>Year 2, Semester 1 – 6 credit points</i>		
PSYC 4503	Special Fields Topic	6
<i>Year 2, Semester 2 – 12 credit points</i>		
Two Electives		12

PSYC 4500 Research Project (A)

10 credit points. **Session:** Semester 1. **Classes:** 1 hr/week. **Corequisites:** PSYC 4501. **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. **Session:** Semester 1. **Classes:** 44 hrs/semester. **Assumed Knowledge:** Nothing in excess of requirements set for admission into the GradDipSc(Psych) programme. **Assessment:** EDSA - 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. **Session:** Semester 2. **Classes:** 1 x 1 hour lecture/week x 7 weeks. **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. **Session:** Semester 1. **Classes:** 1 x 1 hour seminar/week x 12 weeks. **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. **Session:** Semester 2. **Classes:** 1 hour supervision/week. **Prerequisites:** PSYC4500. **Assessment:** 9000 word report.

See description under Research Project A (PSYC 4500) above.

PSYC 4506 Health and Safety Psychology Issues

6 credit points. **Session:** Semester 2. **Classes:** 25 hrs/sem. **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. **Session:** Semester 2. **Classes:** 25 hrs/sem. **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. **Session:** Semester 2. **Classes:** 25 hrs/sem. **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. **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 degrees 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 in the following subject areas:

Bioinformatics

Coastal Management

Environmental Science

Microscopy and Microanalysis

Molecular Biotechnology

Neuroscience

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)

508 Master of Applied Science (Bioinformatics) (preamble ID: 508)

Unit of study		Core
Unless otherwise indicated, all units are worth 6 credit points		
Stream A		
<i>Graduate Certificate</i>		
BIOL 5001	Molecular Genetics & Inheritance	C
BIOL 5002	Bioinformatics: Sequences & Genomes	C
STAT 5001	Applied Statistics for Bioinformatics	C

6. Postgraduate degree requirements

Graduate Diploma and Masters additional units		
BINF 5002	Bioinformatics Research Project A	
BINF 5003	Bioinformatics Research Project B	
COMP 5213	Computer & Network Organisation	
COMP 5214	Software Development in Java	
Stream B		
Graduate Certificate		
BIOL 5002	Bioinformatics: Sequences & Genomes	C
COMP 5213	Computer & Network Organisation	C
STAT 5001	Applied Statistics for Bioinformatics	C
Graduate Diploma and Masters additional units		
COMP 5214	Software Development in Java	C
BIOL 5001	Molecular Genetics & Inheritance	
BINF 5002	Bioinformatics Research Project A	
BINF 5003	Bioinformatics Research Project B	

BINF 5002 Bioinformatics Research Project A

6 credit points. 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. 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. **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. 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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec & 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. **Session:** Semester 1, Semester 2. **Classes:** 2 lec & 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. Dr Kevin Downard Dr Neville Firth Prof Tony Weiss. **Session:** Semester 1. **Classes:** 2 lectures and 1 tutorial per week. **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. **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)

509 Master of Applied Science (Coastal Management) (preamble ID: 509)

Unit of study		Core/option
Unless otherwise indicated, all units are worth 6 credit points		
<i>Graduate Certificate</i>		
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 Systems (Intro)	C/O
<i>Graduate Diploma and Masters</i>		
MARS 5001	Coastal Processes and Systems	C
MARS 5002	Coastal Zone Management	C
MARS 5003	Beach Management	C
GEOG 5001	Geographic Information Systems	C
MARS 5004	Coastal Management Field School	O
NTMP 5005	Tropical Coastal Management	O
<i>Masters</i>		
MARS 5005	Coastal Management Project (12cp)	O
<i>Optional units – all degrees</i>		
CHEM 5001	Information Retrieval in the Sciences	O
ENVI 5705	Ecological Principles for Scientists	O
ENVI 5803	Law and the Environment	O
ENVI 5808	Applied Ecology for Environmental Scientists	O
ENVI 5809	Computer Modelling & Resource Management	O
GEOG 5002	Geographic Information Science (Adv)	O

MARS 5001 Coastal Processes and Systems

6 credit points. **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. **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 management 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. **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 5004 Coastal Management Field School

6 credit points. **Session:** Semester 2. **Corequisites:** MARS5001, MARS5002, MARS5003 and GEOG5001.

The field school will be based around visits to a series of coastal sites along the NSW coast. The unit will include a series of introductory lectures followed by visits to the sites where both unit staff and local coastal managers and stakeholders will address the students on the nature of the site, its historical development and contemporary coastal management issues and solutions. Sites will be selected to the representative of both the range of coastal systems present along the NSW coast, as well as the range of management issues presented by the sites.

MARS 5005 Coastal Management Project

12 credit points. **Session:** Semester 1, Semester 2. **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. Prof Andy Short. **Session:** Semester 2. **Classes:** Fieldschool 80hrs intensive. **Corequisites:** MARS (5002 and 5003). **Assessment:** Presentation, teamwork, assignment, 1 hr exam.

NB: Department permission required for enrolment. Limited quota of places.

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 Systems (Intro)

6 credit points. 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 applic-

6. Postgraduate degree requirements

ations, and the development of thematic maps from diverse data layers, will be addressed.

GEOG 5002 Geographic Information Science (Adv)

6 credit points. Dr Eleanor Bruce. **Session:** Semester 2. **Classes:** 2 lec, 1 tut, 3 prac/w. **Assumed Knowledge:** 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. Dr Carmen Gainor. **Session:** Semester 2. **Prerequisites:** GEOG5001. The unit introduces methods associated with acquiring data in the field and examines issues associated with application of spatial data to environmental monitoring, terrain mapping and geocomputing. Students will learn both theoretically and practically how environmental data is collected using different remote sensing techniques, (pre)processing methods of integrating data in a GIS environment and the role of spatial data in understanding landscape processes and quantifying environmental change.

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 (ENVI 5708 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		
<i>Graduate Certificate</i>		
ENVI 5705	Ecological Principles for Environmental Scientists	C
ENVI 5808	Applied Ecology for Environmental Scientists	C
<i>Graduate Diploma and Masters</i>		
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
<i>Optional units – Masters degree only</i>		

ENVI 5501	Environmental Research Project	O
<i>Optional units – all degrees</i>		
ENVI 5801	Social Science of the Environment	O
ENVI 5802	Resources and Regional Development	O
ENVI 5904	Understanding Environmental Uncertainty	O
GEOG 5002	Geographic Information Systems (Adv)	O
MARS 5001	Coastal Processes and Systems	O
MARS 5002	Coastal Zone Management	O
MARS 5003	Beach Management	O
ENVI 5501	Environmental Research Project (12cp)	O
ENVI 5707	Energy – Sources, Uses and Alternatives	O
ENVI 5803	Law and the Environment	O
ENVI 5805	The Urban Environment and Planning	O
ENVI 5809	Computer Modelling & Resource Management	O
ENVI 5901	Weathering Processes and Applications	O
ENVI 5903	Sustainable Development	O
ENVI 5904	Understanding Environmental Uncertainty	O
ENGG 5601	Greenhouse Gas Mitigation	O
GEOG 5001	Geographic Information Systems (Intro)	O
CHEM 5001	Information Retrieval in the Sciences	O
PACS 6903	Peace and the Environment	O
WILD 5001	Australasian Wildlife: Introduction	O
WILD 5002	Australasian Wildlife: Field Studies	O
WILD 5007	Sustainable Wildlife Use and Stewardship	O

ENGG 5601 Greenhouse Gas Mitigation

6 credit points. 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. **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. 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. 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. 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. Associate Professor Philip Hirsch. **Session:** Semester 2. **Classes:** 2 lec, 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-session field visit.

ENVI 5802 Resources and Regional Development

6 credit points. Assoc Prof Philip Hirsch. **Session:** Semester 2. **Classes:** 2 lec, 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,

6. Postgraduate degree requirements

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. 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. 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. 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. Dr David Chapman. **Session:** Semester 1, Semester 2. **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 5901 Weathering Processes and Applications

6 credit points. A/Prof Deirdre Dragovich. **Session:** Semester 2. **Classes:** Three lectures per week. **Assessment:** Assignment and field report.

The physical, chemical and biological weathering processes operating in different rocks and weathering environments will be considered in relation to: solution weathering and its acceleration following environmental acidification; the weathering of building and monumental stone; and, the use of weathering products (eg. desert varnish) as environmental indicators.

ENVI 5903 Sustainable Development

6 credit points. 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. 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 Systems (Intro)

6 credit points. 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 (Adv)

6 credit points. Dr Eleanor Bruce. **Session:** Semester 2. **Classes:** 2 lec, 1 tut, 3 prac/w. **Assumed Knowledge:** 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. Dr Carmen Gainor. **Session:** Semester 2. **Prerequisites:** GEOG5001.

The unit introduces methods associated with acquiring data in the field and examines issues associated with application of spatial data to environmental monitoring, terrain mapping and geocomputing. Students will learn both theoretically and practically how environmental data is collected using different remote sensing techniques, (pre)processing methods of integrating data in a GIS environment and the role of spatial data in understanding landscape processes and quantifying environmental change.

PACS 6903 Peace and the Environment

6 credit points. Dr Wendy Lambourne and Mr Paul Clark. **Session:** Semester 2. **Classes:** 2 hours per week. **Assessment:** 5,000 word essay.

This unit considers the relationship between environmental degradation and human conflict in a range of geographical and cultural settings. Students investigate their personal relationships with 'nature' before exploring the reasons why the environment is being degraded. In Part 1 attention is focused on the reasons why individuals in Western industrialised nations have come to see nature as 'other', 'separate' or 'removed'. From Plato onwards we explore Western environmental discourse in order to understand why human beings appear to have an increasingly violent relationship with nature. In Part 2 the links between environmental degradation and conflict are explored using the impacts of the anthropogenic greenhouse effects as a case study. Part 3 is the solutions part of the course. The concept of sustainability is explored, its contradictions highlighted and new approaches to environmental security advanced. Finally, attention is focused on the whole issue of peace building through environmental protection at the local, regional and international levels.

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)

510 Master of Applied Science (Microscopy and Microanalysis) (preamble ID: 510)

Unit of study		Core/option
All units are worth 6 credit points		
<i>Graduate Certificate, Graduate Diploma and Masters Core units</i>		
MCAN 5005	Introductory Microscopy & Microanalysis	C
MCAN 5006	Electron Microscopy	C

<i>Graduate Certificate, Graduate Diploma and Masters Optional units</i>		
MCAN 5101	Confocal & Fluorescence Microscopy	O
MCAN 5102	Biological Specimen Preparation	O
MCAN 5103	Materials Preparation and Microscopy	O
MCAN 5104	Image Analysis	O
MCAN 5110	Nanostructural Analysis of Materials	O
MCAN 5111	Microscopy of Biomolecular Processes	O
MCAN 5112	Advances in Modern Microscopy	O
MCAN 5210	Research Methodology	O
<i>Masters Additional Core units</i>		
MCAN 5201	Project and Report A	C
MCAN 5202	Project and Report B	C
<i>Masters, Research path, Additional Core units</i>		
MCAN 5203	Project and Report Part C	C
MCAN 5210	Research Methodology	C

MCAN 5005 **Introductory Microscopy & Microanalysis**

6 credit points. **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. **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. **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. **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. **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. **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. **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. **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 cryo-procedures for EM, micro and nano-analytical procedures for biological applications.

MCAN 5112 **Advances in Modern Microscopy**

6 credit points. **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. **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. **Session:** Semester 1, Semester 2. **Corequisites:** MCAN 5201.. See MCAN 5201.

MCAN 5203 **Project and Report Part C**

6 credit points. **Session:** Semester 1, Semester 2. **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.

6. Postgraduate degree requirements

MCAN 5210 Research Methodology

6 credit points. **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 either a Bachelor's degree in Science (or equivalent) 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 suitable Bachelor's degree (or equivalent) 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).

Applicants for a Master of Applied Science (Molecular Biotechnology) should hold a suitable Bachelor's degree (or equivalent) and

previous experience in a relevant area, or have completed the Graduate Diploma in Applied Science (Molecular Biotechnology) or equivalent.

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

CHEM5001 Information Retrieval in the Sciences

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		
<i>Core units – all degrees</i>		
MOBT 5101	Applied Molecular Biotechnology A	C
MOBT 5102	Applied Molecular Biotechnology B	C
<i>Core units – Masters only</i>		
MOBT 5203	Applied Molecular Biotech C (Theory)	C/O
MOBT 5303	Applied Molecular Biotech C (Project)	C/O

MOBT 5101 Applied Molecular Biotechnology A

12 credit points. **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. **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. 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, Semester 2. **Classes:** 2 hrs lectures and 1 hr tutorial per week. **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. Dr Rachel Codd, Dr Kevin Downard, Dr Neville Firth, Prof Tony Weiss.
Session: Semester 1, Semester 2. **Prerequisites:** MOBT (5101 or 5102). **Corequisites:** MOBT5203. **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)****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 con-

sequently 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	
<i>Optional units – all degrees</i>	
NEUR 5101	Neurobiology of Addiction
NEUR 5102	Neuroscience of Aging
NEUR 5103	Brain Development
NEUR 5104	Psychobiology of Learning and Memory
NEUR 5105	Movement and Motor Control
NEUR 5106	Pain
NEUR 5107	Neurobiology of Psychoses
NEUR 5108	Visual Neuroscience
<i>Project units – Graduate Diploma and Masters only</i>	
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. **Session:** Semester 1, Semester 2, S2 Intensive. **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 su-

6. Postgraduate degree requirements

pervisor, 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. **Session:** Semester 1, Semester 2, S2 Intensive. **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. **Session:** Semester 1, Semester 2, S2 Intensive. **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. **Session:** Semester 1, Semester 2, S2 Intensive. **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. **Session:** Semester 2, S1 Intensive, S2 Intensive.

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. **Session:** Semester 1, S2 Intensive.

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. **Session:** Semester 1, S2 Intensive.

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. **Session:** Semester 2, S1 Intensive, S2 Intensive.

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. **Session:** Semester 2, S1 Intensive, S2 Intensive.

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. **Session:** Semester 2, S1 Intensive, S2 Intensive.

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 representations 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. **Session:** S1 Intensive, S2 Intensive.

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 as 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. **Session:** Semester 2, S1 Intensive, S2 Intensive.

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)

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.

Unit of study		Core/option
Unless otherwise indicated, all units are worth 6 credit points		
<i>Core units – all degrees</i>		
NTDT 6001	Advanced Nutritional Support (Theory)	C
NTDT 6011	Advanced Nutritional Support (Clinical)	C
<i>Elective units – all degrees</i>		
NTDT 6002	Nutrition Support in Critical Care	O
NTDT 6012	Critical Care Nutritional Support	O
NTDT 6003	Medical Gastroenterology (Theory)	O
NTDT 6013	Medical Gastroenterology (Clinical)	O
NTDT 6004	Surgical Gastroenterology (Theory)	O
NTDT 6014	Surgical Gastroenterology (Clinical)	O

NTDT 6002 Nutrition Support in Critical Care

6 credit points. **Session:** Semester 1. **AssumedKnowledge:** Bachelor of Science degree and eligibility for membership of the Dietitians Association of Australia. **Prerequisites:** NTDT (6001 or 6011).

This course is designed to introduce practising dietitians to the nature of therapeutic work with common nutritional support problems of adults and children, through a series of theoretical modules available via Web CT and the internet, culminating in assessment by written assignment. Theoretical knowledge of critical care builds on a sound knowledge of metabolic pathways, metabolism and an evidence-based approach to nutritional support. Emphasis is placed upon the application of evidence-based therapies to the common critical care cases encountered in adults and children.

Textbooks

Relevant information will be supplied via WebCT.

NTDT 6003 Medical Gastroenterology (Theory)

6 credit points. **Session:** Semester 2. **AssumedKnowledge:** Bachelor of Science degree and eligibility for membership of the Dietitians Association of Australia. **Prerequisites:** NTDT (6001 or 6011).

This course is designed to introduce practising dietitians to the nature of therapeutic work with common nutritional support problems of adults and children, through a series of theoretical modules available via Web CT and the internet, culminating in assessment by written assignment. Theoretical knowledge of nutrition support in medical aspects of gastroenterology builds on a sound knowledge of metabolic pathways, metabolism and an evidence-based approach to nutritional support. Emphasis is placed upon the application of evidence-based therapies to the medical aspects of gastroenterology cases encountered in adults and children.

Textbooks

Relevant information will be supplied via WebCT.

NTDT 6004 Surgical Gastroenterology (Theory)

6 credit points. **Session:** Semester 2. **AssumedKnowledge:** Bachelor of Science degree and eligibility for membership of the Dietitians Association of Australia. **Prerequisites:** NTDT (6001 or 6011).

This course is designed to introduce practising dietitians to the nature of therapeutic work with common nutritional support problems of adults and children, through a series of theoretical modules available via Web CT and the internet, culminating in assessment by written assignment. Theoretical knowledge of nutrition support of surgical

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.

aspects of gastroenterology builds on a sound knowledge of metabolic pathways, metabolism and an evidence-based approach to nutritional support. Emphasis is placed upon the application of evidence-based therapies to the surgical aspects of gastroenterology cases encountered in adults and children.

Textbooks

Relevant information will be supplied via WebCT.

NTDT 6011 Advanced Nutritional Support (Clinical)

6 credit points. **Session:** Semester 1. **AssumedKnowledge:** Bachelor of Science degree and eligibility for membership of the Dietitians Association of Australia. **Corequisites:** NTDT6001.

NB: This unit of study is linked to the clinical placement unit of study NTDT6001. As NTDT6001 and NTDT6011 are core units it is recommended that they be completed prior to enrolment in elective units

This course is designed to introduce practising dietitians to the nature of therapeutic work with common nutritional support problems of adults and children. This is achieved through a 40-hour clinical placement. Clinical placement is assessed through a clinical viva and ongoing clinical skill assessment. Emphasis is placed on the strong theory/clinical link and skill development. This emphasis reinforces the importance of the interpretation of biochemical indicators, relevant medical history, clinical signs, anthropometry, biochemistry and estimations of nutritional support requirements.

Textbooks

Relevant information will be supplied via WebCT.

NTDT 6012 Critical Care Nutritional Support

6 credit points. **Session:** Semester 1. **AssumedKnowledge:** Bachelor of Science degree and eligibility for membership of the Dietitians Association of Australia. **Prerequisites:** NTDT6002 and either NTDT6001 or NTDT6011.

This course is designed to introduce practising dietitians to the nature of therapeutic work with common nutritional support problems of adults and children. This is achieved through a 40-hour clinical placement. Clinical placement will be assessed through a clinical viva and ongoing clinical skill assessment. Emphasis is placed on the strong theory/clinical link and skill development. This emphasis reinforces the importance of the interpretation of biochemical indicators, relevant medical history, clinical signs, anthropometry, biochemistry and estimations of nutritional support requirements in critical care.

Textbooks

6. Postgraduate degree requirements

Relevant information will be supplied via WebCT.

NTDT 6013 Medical Gastroenterology (Clinical)

6 credit points. **Session:** Semester 2. **Assumed Knowledge:** Bachelor of Science degree and eligibility for membership of the Dietitians Association of Australia. **Prerequisites:** NTDT6003 and either NTDT6001 or NTDT6011.

This course is designed to introduce practising dietitians to the nature of therapeutic work with common nutritional support problems of adults and children. This is achieved through a 40-hour clinical placement. Clinical placement will be assessed through a clinical viva and ongoing clinical skill assessment. Emphasis is placed on the strong theory/clinical link and skill development. This emphasis reinforces the importance of the interpretation of biochemical indicators, relevant medical history, clinical signs, anthropometry, biochemistry and estimations of nutritional support requirements in medical aspects of gastroenterology cases.

Textbooks

Relevant information will be supplied via WebCT.

NTDT 6014 Surgical Gastroenterology (Clinical)

6 credit points. **Session:** Semester 2. **Assumed Knowledge:** Bachelor of Science degree and eligibility for membership of the Dietitians Association of Australia. **Prerequisites:** NTDT6004 and either NTDT6001 or NTDT6011.

This course is designed to introduce practising dietitians to the nature of therapeutic work with common nutritional support problems of adults and children. This is achieved through a 40-hour clinical placement. Clinical placement will be assessed through a clinical viva and ongoing clinical skill assessment. Emphasis is placed on the strong theory/clinical link and skill development. This emphasis reinforces the importance of the interpretation of biochemical indicators, relevant medical history, clinical signs, anthropometry, biochemistry and estimations of nutritional support requirements in surgical aspects of gastroenterology cases.

Textbooks

Relevant information will be supplied via WebCT.

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.

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-practitioner 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.

Admission 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		
<i>Core units – all degrees</i>		
PSYC 4721	Theories & Techniques of Coaching Psych	C
PSYC 4722	Fundamentals of Coaching Practice	C
PSYC 4724	Coaching Practice: Co-coaching & Groups	C
<i>Elective units – Graduate Diploma</i>		
PSYC 4723	Socio-cognitive Issues in Coaching Psych	O
PSYC 4725	Assessment and Selection	O
PSYC 4727	Coaching in Organisations	O
PSYC 4729	Groups, Teams and Systems	O
PSYC 4730	Personal and Work/Life Coaching	O

PSYC 4721 Theories & Techniques of Coaching Psych

6 credit points. **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 com-

ponent. 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. **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; Whitmore, 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. **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. **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. **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. **Session:** S2 Intensive. **Classes:** 24 hours/sem (4 days). **Prerequisites:** PSYC (4721 and 4722 and either 4724 or 4728). **Assessment:** Written assignment and exam.

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 manager-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. **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. **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)

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 combination 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.

COMP 5338 Advanced Data Models

6 credit points. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assumed Knowledge:** COMP5138 Relational Database Management Systems. **Assessment:** Assignments, written exam.
NB: Department permission required for enrolment.

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. Dr David Chapman. **Session:** Semester 1, Semester 2. **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 Systems (Intro)

6 credit points. 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 (Adv)

6 credit points. Dr Eleanor Bruce. **Session:** Semester 2. **Classes:** 2 lec, 1 tut, 3 prac/w. **Assumed Knowledge:** 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. Dr Geoff Clarke. **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. Dr Carmen Gainor. **Session:** Semester 2. **Prerequisites:** GEOG5001. The unit introduces methods associated with acquiring data in the field and examines issues associated with application of spatial data to environmental monitoring, terrain mapping and geocomputing. Students will learn both theoretically and practically how environmental data is collected using different remote sensing techniques, (pre)processing methods of integrating data in a GIS environment and the role of spatial data in understanding landscape processes and quantifying environmental change.

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/Optional
Unless otherwise indicated, all units are worth 6 credit points.		
GEOG5001	Geographic Information Systems (Intro)	C
GEOG5002	Geographic Information Science (Adv)	C
GEOG5003	Environmental Remote Sensing	O
GEOG5004	Environmental Mapping and Monitoring	O
COMP5338	Advanced Data Models	O
ENVI5809	Computer Modelling & Resource Management	O

COMP 5338 Advanced Data Models

6 credit points. **Session:** Semester 1, Semester 2. **Classes:** 2 lec, 1 tut/wk. **Assumed Knowledge:** COMP5138 Relational Database Management Systems. **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. Dr David Chapman. **Session:** Semester 1, Semester 2. **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 Systems (Intro)

6 credit points. 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 (Adv)

6 credit points. Dr Eleanor Bruce. **Session:** Semester 2. **Classes:** 2 lec, 1 tut, 3 prac/w. **Assumed Knowledge:** 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. Dr Geoff Clarke. **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. Dr Carmen Gainor. **Session:** Semester 2. **Prerequisites:** GEOG5001.

The unit introduces methods associated with acquiring data in the field and examines issues associated with application of spatial data to environmental monitoring, terrain mapping and geocomputing. Students will learn both theoretically and practically how environmental data is collected using different remote sensing techniques, (pre)processing methods of integrating data in a GIS environment and the role of spatial data in understanding landscape processes and quantifying environmental change.

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

6. Postgraduate degree requirements

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		
<i>Core units – all degrees</i>		
WILD 5001	Australasian Wildlife: Introduction	C
WILD 5002	Australasian Wildlife: Field Studies	C
<i>Additional core unit – Masters</i>		
WILD 5009	Research Project (12cp)	C
<i>Optional units</i>		
WILD 5003	Wildlife Health	O
WILD 5004	Vertebrate Pest Management	O
WILD 5005	In Situ Wildlife Management	O
WILD 5006	Ex Situ Wildlife Management	O
WILD 5007	Sustainable Wildlife Use & Stewardship	O

WILD 5001 Australasian Wildlife: Introduction

6 credit points. **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. **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. **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. **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. **Session:** Semester 1, Semester 2.

NB: Department permission required for enrolment. 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. **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. **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. **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

7. Postgraduate degree regulations

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

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

Degrees of Master

MSc – Master of Science
 MSc(EnvironSc) – Master of Science (Environmental Science)
 MInfTech – Master of Information Technology
 MAppIT – Master of Applied Information Technology
 MMedPhys – Master of Medical Physics
 MNutrDiet – Master of Nutrition and Dietetics
 MNutrSc – Master of Nutritional Science
 MEnvSciLaw – Master of Environmental Science and Law
 MAppSc – Master of Applied Science
 MAppSc(Bioinf) – Master of Applied Science (Bioinformatics)
 MAppSc(Coastal Mgt) – Master of Applied Science (Coastal Management)
 MAppSc(EnvSc) – Master of Applied Science (Environmental Science)
 MAppSc(Microsc & Microanal) – Master of Applied Science (Microscopy and Microanalysis)
 MAppSc(MBT) – Master of Applied Science (Molecular Biotechnology)
 MAppSc(NeuroSc) – Master of Applied Science (Neuroscience)
 MAppSc(Nutr & Diet) – Master of Applied Science (Nutrition and Dietetics)
 MAppSc(PsycCoach) – Master of Applied Science (Psychology of Coaching)
 MAppSc(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
 GradDipAppIT – Graduate Diploma in Applied Information Technology
 GradDipComp – Graduate Diploma in Computing
 GradDipMedPhys – Graduate Diploma in Medical Physics
 GradDipPsych – Graduate Diploma in Psychology
 GradDipAppSc – Graduate Diploma in Applied Science
 GradDipAppSc(Bioinf) – Graduate Diploma in Applied Science (Bioinformatics)
 GradDipAppSc(Coastal Mgt) – Graduate Diploma in Applied Science (Coastal Management)
 GradDipAppSc(EnvSc) – Graduate Diploma in Applied Science (Environmental Science)
 GradDipAppSc(Microsc & Microanal) – Graduate Diploma in Applied Science (Microscopy and Microanalysis)
 GradDipAppSc(MBT) – Graduate Diploma in Applied Science (Molecular Biotechnology)
 GradDipAppSc(NeuroSc) – Graduate Diploma in Applied Science (Neuroscience)
 GradDipAppSc(Nutr & Diet) – Graduate Diploma in Applied Science (Nutrition and Dietetics)
 GradDipAppSc(PsycCoach) – Graduate Diploma in Applied Science (Psychology of Coaching)
 GradDipAppSc(WildHlthPopMan) – Graduate Diploma in Applied Science (Wildlife Health and Population Management)

Certificates

GradCertSc(HPS) – Graduate Certificate in Science (History and Philosophy of Science)
 GradCertInfTech – Graduate Certificate in Information Technology

GradCertAppIT – Graduate Certificate in Applied Information Technology
 GradCertAppSc – Graduate Certificate in Applied Science
 GradCertAppSc(Bioinf) – Graduate Certificate in Applied Science (Bioinformatics)
 GradCertAppSc(Coastal Mgt) – Graduate Certificate in Applied Science (Coastal Management)
 GradCertAppSc(EnvSc) – Graduate Certificate in Applied Science (Environmental Science)
 GradCertAppSc(Microsc & Microanal) – Graduate Certificate in Applied Science (Microscopy and Microanalysis)
 GradCertAppSc(MBT) – Graduate Certificate in Applied Science (Molecular Biotechnology)
 GradCertAppSc(NeuroSc) – Graduate Certificate in Applied Science (Neuroscience)
 GradCertAppSc(Nutr & Diet) – Graduate Certificate in Applied Science (Nutrition and Dietetics)
 GradCertAppSc(PsycCoach) – Graduate Certificate in Applied Science (Psychology of Coaching)
 GradCertAppSc(SIS) – Graduate Certificate in Applied Science (Spatial Information Science)
 GradCertAppSc(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)

- University of Sydney (Coursework) Rule 2000 (as amended)

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.

(iii) 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.

Table 7.1: DCP/MSc requirements

Year	Sem.	Therapy Knowledge and Skills	Assessment Knowledge and Skills	Clinical Internships	Case Seminars	Research
1	1	PSYC6051 Adult Psychological Disorders	PSYC6002 Psychological 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	PSYC6007 Psychological Assessment of Children	PSYC6008 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		

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'.

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

7. Postgraduate degree regulations

(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 (Subject to Academic Board approval)

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 Neuroscychology / Master of Science (DCN/MSc)

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.

Table 7.2 DCN/MSc requirements

Year	Sem.	Therapy Knowledge and Skills	Assessment Knowledge and Skills	Clinical Internships	Case Seminars	Research
1	1	PSYC6052 Adult Neuropsychological Disorders	PSYC6002 Psychological Assessment of Adults	PSYC6034 Neuropsychology Clinical Internship 1	PSYC6004 Ethics and Professional Practice PSYC6040 Neuropsychology Case Seminars 1	PSYC6005 Research 1
	2	PSYC6053 Developmental Disorders	PSYC6007 Psychological Assessment of Children PSYC6030 Paediatric Neuropsychological Disorders	PSYC6035 Neuropsychology Clinical Internship 2	PSYC6041 Neuropsychology Case Seminars 2	PSYC6010 Research 2
2	1	PSYC6033 Issues in Rehabilitation PSYC6051 Adult Psychological Disorders	PSYC6054 Adult Neuropsychopathology PSYC6046 Seminars in Clinical Neuropsychology	PSYC6036 Neuropsychology Clinical Internship 3	PSYC6042 Neuropsychology Case Seminars 3	PSYC6015 Research 3
	2	PSYC6048 Neuroanatomy	PSYC6047 Seminars in Clinical Neuropsychology Adv	PSYC6037 Neuropsychology Clinical Internship 4	PSYC6063 Neuropsychology Case Seminars 4	
3	1	Nil	Nil	PSYC6059 Neuropsychology Clinical Internship and Seminars 5		
	2	Nil	Nil	PSYC6060 Neuropsychology Clinical Internship and Seminars 6		

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 (Subject to Academic Board approval)

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.

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 unit of study for the degree of Bachelor of Science; or

(ii) in a unit of study 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.

1a. 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

7. Postgraduate degree regulations

- (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 - ie, 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
- (iii) 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 de-

scribed 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 proportion 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 - ie, 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 other 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.

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 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 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 and Telecommunications Engineering.

(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 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) to an applicant who is the holder of a bachelors degree in Science or Engineering from The University of Sydney provided the applicant has achieved a major in physics, or equivalent.
 - (ii) to a graduate of another university or appropriate institution who has equivalent qualifications to those specified in subsection (a);
 - (2) the Master of Medical Physics to a person who has the qualifications specified in subsection (1)(i), or a person 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 Masters:
 - (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 Masters 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 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 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 candidate 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(1)(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, 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 (MEnvSciLaw)

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

7. Postgraduate degree regulations

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 of ten 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 (LAWS 6044);

(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 (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

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:

Unit of study		Credit points
Full-time students		
<i>Semester 1 Core units – 24 credit points</i>		
PSYC 4500	Research Project (A)	10
PSYC 4501	Psychological Research Methods	8
PSYC 4503	Special Fields Topic (A)	6
<i>Semester 2 Core units – 24 credit points</i>		
PSYC 4505	Research Project (B)	10
PSYC 4502	Ethics and Current Issues in Psychology	2
<i>Semester 2 Optional units of study (select 2 electives)</i>		
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		
<i>Year 1, Semester 1 – 18 credit points</i>		
PSYC 4500	Research Project (A)	10
PSYC 4501	Psychological Research Methods	8
<i>Year 1, Semester 2 – 12 credit points</i>		
PSYC 4505	Research Project (B)	10
PSYC 4502	Ethics	2
<i>Year 2, Semester 1 – 6 credit points</i>		
PSYC 4503	Special Fields Topic	6
<i>Year 2, Semester 2 – 12 credit points</i>		
Two Electives		12

3. Satisfactory progress shall be as determined by the Faculty.

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 (GradDipInTech)

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

7. Postgraduate degree regulations

(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 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 from The University of Sydney, or an 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.

3. Conditions of candidature are prescribed by Resolution of the Faculty.

Resolutions of the Faculty

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 and PSYC 3202. 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.

Credit

8. Students may apply for credit (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 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:

- to attend seminars and other meetings as recommended; and
- to complete satisfactorily any practical and theoretical assignments.

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 (GradCertInTech)**Resolutions of the Senate****Eligibility for admission**

1. The Dean of the Faculty of Science may admit to candidature:

- graduates who have completed a Bachelor's degree, with a substantial study of a relevant field of Information Technology; or
- graduates who have completed a Bachelor of Engineering degree with a major sequence of study in Computer Engineering, Software Engineering or Telecommunications Engineering; or
- 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:

- 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 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

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).

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:

- 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 the following subject areas, and the testamur for the award will specify the subject area:

Bioinformatics

Coastal Management

Environmental Science

Microscopy & Microanalysis

Molecular Biotechnology

Neuroscience

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

7. Postgraduate degree regulations

- (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. 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.
- 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) (GradDipApplSc(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 (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))

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 and:

(1) have completed a 4 year full-time (or equivalent part-time) course in Psychology; or

(2) have a 3 year sequence in Psychology and/or relevant work/life experience.

(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.

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.

7. Postgraduate degree regulations

(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.

8. Staff

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

Faculty of Science

Dean's Office

Dean

Professor David A Day, BSc PhD *Adel* DipTeach *AdelTeachColl*

Pro-Deans

Associate Professor Christopher B Gillies, MAgSc *Qld* PhD *Alta*

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
Associate Professor Deirdre Dragovich, MA *Adel* PhD
Associate Professor Alan Fekete, PhD *Harv* BSc
Professor David Feng, ME SJTU MS PhD *UCLA*
Adrian George, BSc PhD *R'dg*, MRSC MRACI CChem
Thomas CT Hubble, MAppSc *NSW* MSc DipEd 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*
Associate 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

Tamara Grant, BA MA(Merit) *CELTA*

Undergraduate Assistant

Vacant

International Student Adviser

Vacant

Computer Systems Officer

Anthony Butler, BA *Melb* GradDipCompStud *Canberra*

Marketing and Communication unit

Manager, Marketing & International Relations

Jasmine Chambers

Marketing & Schools Liaison Officer

Ainsley Piper, BTeach BED *UNE*

Marketing & Events Officer

Cath Brown

Student Information Officer

Linda Kristian, MA(Journalism) *UTS* BA

Web Developer

Jayne Ion

Agricultural Chemistry and Soil Science

Professor and Dean, Faculty of Agriculture

Les Copeland, BSc PhD, MRACI 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, BSc PhD *Aberd*. Appointed 1995

Senior Lecturers

Robert A Caldwell, MSc PhD, MRACI CChem
Stephen R Cattle, BScAgr PhD
Edith M Lees, BSc PhD *Lond*
Balwant Singh, MSc *Haryana Agric Univ HISAR India* PhD *WAust*

McCaughey Lecturer in Hydrology and Catchment Management

R Willem Vervoort, Agr Eng *Wageningen* PhD *Georgia*

Senior Research Associates

Inakwu OA Odeh, BSc *Ibadan* PhD *Adel*
John Triantifilis, BScAgr PhD

Research Associates

Rosalind Deaker, BSc MScAgr PhD
Damian Field, BSc PhD
Nanju Lee, BScAgr PhD
Budiman Minasny, BAgSc *Sumatera Utara* MAgr PhD
Raphael Viscana Rossell, BAgSc PhD
Shuo Wang, MScAgr PhD
Brett Whelan, BScAgr 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, MSc *Manc* PhD *Camb*, HonDScAgr FRS-Chem

Honorary Associates

Harold R Geering, MSc *C'nell*
Rodney J Roughley, PhD *Lond* MScAgr
Norman K Matheson, PhD *Edin* MSc

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, MOptn 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

Luke Henderson, PhD

Neil Nosworthy, PhD

Michael Slater, BSc *Macq* PhD

Postdoctoral Fellows

Vlado Buljan, PhD

Toby Knight, BAgSc PhD *Adel*

Kyle Mervin, PhD

Claudia Monassi

Diana Oakes, BSc *NSW* PhD

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

Sue Freeman-Levy, BA DipEd

Lena Ting, DipPublAdmin *HK*

Katherine Wilkinson, BMus(Perf) *ANU* BFA *NAS*

Administrative Assistants

Mai Pham, BSc *UTS*

Honorary Senior Research Associates

Julian A Barden, PhD *Macq*

Coral G Chamberlain, MSc PhD

Honorary Associates

Louise Baxter

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

Professor in Terrestrial Ecology (Personal Chair)

Christopher Dickman, BSc *Leeds* PhD *ANU* . Appointed 2004

ARC Australian Professorial Fellow

Richard Shine, BSc *ANU* PhD *NE* DSc, FAA. Appointed 1993 as

Professor in Evolutionary Biology (Personal Chair)

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

Christopher B Gillies, MAgSc *Qld* PhD *Alta*

Rosalind T Hinde, PhD

Benjamin Oldroyd, BScAgr PhD

Robyn L Overall, BSc *NSW* PhD *ANU*

Mary Peat, BSc *Birm* PhD *Brist*

Michael B Thompson, BSc PhD *Adel*

Senior Lecturers

Neville Firth, BSc PhD *Monas h*

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*

Peter McGee, BAgSc PhD *Adel* DipHEd *NSW*

Jan Marc, BSc PhD *NSW*

Director of First Year Biology

Elizabeth May, BSc DipEd PhD *NSW*

Lecturers

Adele Pile, BA *Boston* MA PhD *William & Mary*

Rosanne Quinnell, BSc PhD *ANU*

Jennifer Saleeba, BSc PhD *Melb*

Frank Seebacher, PhD *Qld* BSc

Charlotte Taylor, BSc *Dund* MHED *NSW* PhD *Aberd*

Murray Thomson, BSc *Macq* MSc *NSW* PhD *N'cle*

Glenda Wardle, MSc *Auck* MS PhD *Chic*

Lecturers (part-time)

Mathew Crowther, PhD

Kathryn Raphael, BA PhD *Macq*

Associate Lecturers (part-time)

Osu Lilje, PhD

Stephanie Seddon, PhD *JCU*

Ernestina Tentori, MSc *Mexico* PhD

Postgraduate Teaching Fellows (part-time)

Deana Amr, BSc

Brett Green, BSc *Qld*

Haibi Hu, MBBS *Sun Yat-sen* MMed

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
 Rajkumar Radder, MSc PhD *Karnatak*

Sesqui Postdoctoral Research Fellows

Jonathan Webb, PhD

Grant Funded Postdoctoral Staff

Melissa H Brown, BSc PhD *Adel*
 Stephen Kwong, BTech *Macq* PhD *UWS*
 David Midgeley, BSc *Macq* PhD *UWS*
 Shauna Murray, BSc *NSW* PhD
 Deborah Shearman, MSc PhD
 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 Training

Basil Panayotakos

Resources Officer

Mark Ahern, BSc

Senior Technical Officers

Virginia Klomp, BiolTechCert BiolTechHigherCert *STC*
 Claudio Muhlrads, BiolTechCert *STC*
 Malcolm Ricketts, BSc *Macq* PhotogCert *STC*
 Salvatore Ruggeri
 Heather Sowden, BiolTechCert *STC* (part-time)

Manager, Educational Technology Support and Development

Aida Yalcin, BSc MSc *Aegean Univ Turkey*

Multimedia Courseware Designer

Katherine Kuzmanovic, BSc

Computer Systems Officer

Andrew Oulianoff

Technical Officers

Mark Dickson, BSc
 Leslie Edwards, BiolTechCert AssDipBiolTech *STC* BSc *UTS*
 Mihaly Ferenczi, BAgSc *Godallo*
 Margaret Gilchrist, BiolCert *STC*
 Joanna Walker, BSc GradDipSci(Env Sci)
 Helen Kranidiotis, BSc(Hons) *NSW*
 Xiumei Liang, BSc *Beijing*
 Hamish MacKenzie, BiolCert *STC*
 Ralph Maddox, BiolTechCert *ArmTC*
 Christine Newman, BAppSc *UTS*

Laboratory Assistants

Chantel Kavanagh, DipAppSci *TAFE*
 Hamlet Giragossyan

Caretaker Crommelin Biological Research Station

Colin McKenzie (part-time)

Administration Manager

Maureen Claxton, BA *R'dg* DipEd *NE*

Finance Manager

Louie Briskoski, AssocDip (Accounting) *TAFE*

Administrative Assistants

Roslyn Malin
 Pedro Telleria Teixeira, BA
 Suzan Ramsey
 Semra Yetke

Emeritus Professors

Donald Thomas Anderson, AO, PhD *Lond* DSc *Lond and Syd*, FRS
 FLS FAIBiol
 Charles Birch, BAgSc *Melb* DSc *Adel*, FAA FAAAS
 Ian D Hume, BSc (Agric) PhD *WA* DSc *NE*, FAIBiol
 John Alexander Thomson, MSc MAgrSc PhD *Melb*

Honorary Professors

Anthony WD Larkum, BSc *Lond* DPhil *Oxf*, ARCS
 David Joseph Patterson, PhD *Brist* DSc *Ou*

Honorary Reader

Alan Meats, BSc *Durh* PhD *N'cle (UK)*, FRES

Honorary Associate Professors

William G Allaway, MA *Camb* PhD *Lancs*
 Patricia J Armati, MSc PhD, MAIBiol

Honorary Associates

Suzanne Bassett, MSc *Massey*
 Daniel Bickel, BSc *Mich* PhD
 Walter E Boles, BSc *Emporia State*
 Xavier Bonnet, BSc *Marseille* PhD *Lyon*
 Ross A Bradstock, PhD
 Paula Cisternas, PhD
 Alan Clift, BScAgr PhD
 Harold Cogger, PhD *Macq* DSc
 Donald Colgan, BSc BEC *ANU* PhD *Melb*
 Daniel Faith, BA *Chic* PhD *State Uni of New York*
 Marianne Frommer, PhD
 Allen E Greer, BA *Stan* PhD *Harv*
 John Harper, BSc PhD *QUB*
 George Humphrey, LLB *NSW* BA PhD
 Patricia A Hutchings, BSc *Lond* PhD DSc *N'cle(UK)*
 Michael J Kingsford, BSc *Cant* PhD DSc *Auck*
 Jeffrey M Leis, BSc *Arizona* PhD *Hawaii*
 Francis L Lemckert, MSc
 Valerie B Morris, BSc PhD *Edin*
 Adam Munn, BSc PhD *NSW*
 Christopher Murphy, BSc *Adel* PhD *Flin* DSc
 Peter Myerscough, MA PhD *Oxf*
 Mats Olsson, BSc PhD *Goteborg*
 John Palmer, MSc PhD *Sheff*
 Kerry Parry-Jones, DipEd *STC* MAppSc PhD *NSW* BSc
 John R Paxton, BA MSc PhD *SCalif*
 Winston Ponder, MSc PhD DSc *Auck*
 Ray Ritchie, PhD
 Maurizio Rossetto, BSc *LaTrobe* MSc PhD *WA*
 Gregory Rouse, MSc *Qld* PhD
 John A Sved, BSc PhD *Adel*
 Phillip Taylor, BSc *Lincoln (NZ)* PhD *Cant*
 Donelle Trautman, BSc PhD *Murdoch*
 George Wilson, BA *Indiana* MSc *UCSD* PhD *La Jolla*

Visiting Scholars

Ephraim Cohen, MSc PhD *Jerusalem*
 Frank Gleason, BSc *Trinity College, Hartford* PhD *UCLA*
 William Hughes, BSc *Bangor* MSc *Lond* PhD *S'ton*
 Rudolf Raff, BSc *Penn* PhD *Duke*
 Elizabeth Raff, BS *Penn State* PhD *Duke*
 Andrew Smith, AB *UCLA Berkeley* PhD *UCLA Los Angeles*
 James Stewart, PhD *Tulsa*
 Jeffery Villinski, BA *Minn* MS *Houston*
 Kirk Zigler, BA *Ohio* PhD *Duke*

Chemistry

Professor of Chemistry (Organic Chemistry)

Maxwell J Crossley, BSc PhD *Melb*, FAA FRACI CChem. Appointed 1999

Professor in Chemistry (Organic Chemistry)(Personal Chair)

Leslie D Field, PhD DSc, FAA FRACI CChem. Appointed 1994

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 of Chemistry (Inorganic Chemistry)

Len Lindoy, PhD DSc *NSW*, FAA FRACI CChem FRSC. Appointed 1996

8. Staff

Professor and Head of School

Trevor W Hambley, BSc *WAust* PhD *Adel* , FRACI CChem. Appointed 2002

Professor of Chemistry

Damon D Ridley, BSc PhD, FRACI CChem. Appointed 2003

Professor of Chemistry

Gregory G Warr, BSc PhD *Melb* , FRACI CChem

Professor of Chemistry

Margaret M Harding, PhD DSc, FRACI CChem

Research Professor

Leo Radom, MSc PhD. Appointed 2003

Readers

George Bacskay, BSc *Melb* PhD *Camb*

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 *Griff* DipBusAdmin *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 *JamesCook*

Mark J Coster, BSc *Qld* PhD *Camb*

Noel J Dickson, BSc *Newcastle (NSW)* PhD *Monash*

Christopher D Ling, BSc PhD *ANU*

Timothy Schmidt, BSc PhD *Camb* , MRACI CChem

Federation Fellow

Thomas Maschmeyer, PhD

ARC Professorial Fellows

Phillip J Attard, BSc *NSW* PhD *ANU*

Peter A Lay, BSc *Melb* PhD *ANU* , FRACI CChem

ARC Senior Research Fellows

Jeffery R Reimers, BSc PhD *ANU* , MRACI CChem

ARC QEII Fellows

Katrina A Jolliffe, BSc PhD *NSW* , MRACI CChem

Huai Yong Zhu, BSc *Inner Mongolia* MSc *Nankai* PhD *Antwerp*

(joint with EMU)

Senior Research Fellow

Antony J Ward, PhD

Research Fellows

Hugh Harris, PhD *NSW*

B Klaas Nauta, PhD *NCarolina*

Principal Research Fellow

Brian Hawke, BSc PhD DipEd

Sesqui Postdoctoral Fellows

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*

Research Associates

Iain M Blake, MChem *StAnd* DPhil *Oxf*

Zhengli Cai, MSc PhD *Chinese AcadSci*

Paulo A R Da Silva, BSc *NSW*

Hsiu Lin Li, BSc PhD *Monash*

Postdoctoral Fellows

Iain M Blake, MChem *StAnd* DPhil *Oxf*

Hank De Bruyn, PhD

Alexander Djerdjev, PhD

Nirmesh Jain, BSc MSc PhD *SGU*

Aaron Reynolds, PhD

Anne Rich, PhD

Ewan Sprong, PhD *Stell*

Matthew Tonge, PhD

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)

Jaroslav 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 *Manc* MSc, AO FRS FAA FRACI

Sever Sternhell, PhD DSc *DIC Lond* MSc, FAA FRACI CChem

Walter C Taylor, PhD DSc *Mancs* MSc, FRACI CChem

Professorial Fellow

Dalway J Swaine, MSc *Melb* PhD *Aberd* , FRACI CChem (Inorganic Chemistry)

Honorary Professor

John T Pinhey, PhD DSc, FRACI CChem

Honorary Associate Professors

Robert S Armstrong, MSc PhD, MRACI CChem

Manuel Aroney, AM OBE, PhD DSc, FRACI FRSC CChem Cor-
rMemAcadAthens

Robert J Hunter, BSc PhD, AM FAA FRACI CChem

Julia M James, BSc PhD *Lond* , MRACI 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 Lecturer

Alan J Williams, MSc PhD, MRACI CChem

Honorary Associates

Craig Barnes, PhD, MRACI

Michael M Bishop, BSc PhD *Cant*

Sutharsiny Indusegaram, PhD

Barbara Messerle, PhD, MRACI CChem
 Simone C Vonwiller, PhD
 Jane Weder, BPharm PhD
 Paul Wormell, PhD

Geosciences

Professor and Head of School
 John Connell, BA PhD Lond . Appointed 2001

Professor
 Andrew D Short, MA Hawaii PhD Louisiana State BA. Appointed 2003

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 Müller, BSc Kiel PhD Calif

Reader
 Geoffrey L Clarke, BSc PhD Melb

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 Waik 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 Oxf, 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

Bosch Professor
 Yvonne Edna Cossart, AO, DCP Lond BSc(Med) MBBS, FRCPA. Appointed 1985

Clinical Professor
 Gwendolyn Lesley Gilbert, MD BS Melb , FRACP FRCPA FASM (with Medicine). Appointed 1990

Associate Professors
 Colin Harbour, BSc Wales PhD Lond (Head of Discipline)
 Raymond Kearney, BSc PhD Qld

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)
 Peter John Colignon, MBBS BSc(Med), FRACP RCPA MASM (with Canberra Clinical School and Medicine)

Senior Lecturers

Bernard J Hudson, MBBS, DTPH, FRACP FAFPHM FRCPA

Clinical Senior Lecturers

Ross Bradbury, MBBS, FRACP FRCPA
 Thomas Gottlieb, MBBS, FRACP FRCPA
 Colin MacLeod, MBBS, FRCPA FRACP MASM FAFPHM (with Medicine)

Lecturers

George Kotsiou, MBBS Adel , FRCPA FRACP

Senior Research Fellows

Barbara R Rose, BSc PhD, FAIMLS AAIMLT MASM
 Karen Vickery, BVSc(Hons), MVSc, PhD

Information Technologies

Professor and Head of School

David (Dagan) Feng, ME SJTU MS PhD UCLA . Appointed 2000

Professors

Peter Eades, BA PhD ANU . Appointed Chair of Software Technology, 2000
 David Everitt, BE PhD Qld . Appointed Chair of Internetworking 2001
 Jon D Patrick, DipBehHealthPsych LaTrobe Dipl Surv RMIT BSc Deakin MSc Dub PhD Monash . Appointed Chair of Language Technologies, 2004
 Mary Lou Maher, BS Col MS PhD CMU FIE
 Albert Zomaya, BEng Cairo MSc PhD McG . Appointed Cisco Systems Chair of Internetworking, 2001

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 Massey 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
 Andrea Stern, BA Macq Diploma NSW
 Masahiro Takatsuka, PhD Monash ME TokyoInst Tech
 Bing Bing Zhou, PhD ANU BSc Nanjing

Lecturers

Weidong (Tom) Cai, BSc HuaQiao PhD
 Byounggu Choi, PhD MIS KAIST BA 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
 Bernhard Scholz, Dipl-Ing Dr techn. TUVienna
 Anastasios Viglas
 Zhiyong Wang
 Kalina Yacef, PhD MSc DEA Paris
 Ying Zhou, PhD NUS MEng BSc Nanjing

Associate Lecturers

Darren Louie, BSc Victoria MED
 Simon Poon, MEng UTS BSc GradCert MathsSci UTS

Postdoctoral Fellows

James Curran, ARC Postdoctoral Fellow, PhD Edin , BSc(Adv)
 Janan Hassan, Research Fellow
 Zhonghua (Frank) Ma, Postdoctoral Fellow
 Chen Wang, Research Fellow
 David West, Research Associate
 Lingfeng Wen, PhD

Senior Research Fellow

Aaron Quigley, PhD Newcastle BS(Mod) Hons Trinity College Dublin

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
 Chris Collins

Chief Technical Officer

Remo Di Giovanni

Senior Technical Officers

Allan Creighton
 Arthur Scott

Technical Officers

William Calleja
 Witold Janus
 Abed Kassis

Administrative Manager

Helene Orr, BA UNE

Administrative Officers

Sharon Chambers
 Suzy Dodd, BA BSc
 Candice Fenech
 Wei Ying Ho
 Karen Hunter, BA(Hons)
 Judith Maddison
 Michael McCabe
 Josephine Sponberg

Honorary Appointments

John Baker, PhD NSW
 Kai Xu Beng, BEng PhD Qld
 Em Professor John Makepeace Bennett AO, PhD Camb BE(Civ)
 BE(Mech&Elec) BSc Qld , FTS FACS FBSC FIEAust FIMA
 Fang Chen, MBA Warnborough PhD Beijing Jiaotong Uni BE
 MEngSc Beijing Aeron & Astron
 Zheru Chi, BEng MEng PhD Zhejiang
 Ho Chuen (Eric) Choi, BSc Chinese Uni of Hong Kong PhD
 Merl De Silva, MBBS Ceylon DMRD Royal College of Physicians,
 London FRACR Royal Australian College of Radiologists
 Stefan Eberl, MSc PhD NSW
 Julian Epps, BE PhD NSW
 Michael Fulham, MB BS NSW
 Roger Fulton, MSc PhD UTS
 Vance Gledhill, BSc PhD Melb , FACS
 Ian Gorton, PhD Sheff
 John Hiller, BE MComm PhD NSW
 Michael Hitchens, PhD Newcastle (NSW)
 Doan B Hoang, BE ME WAust PhD Newcastle (NSW)
 Brian Hutton, MSc Aberd PhD UTS BSc
 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
 Muhammad Salam, MSc Karachi PhD Cant
 Yu Shi, BEng MEng PhD Toulouse
 James Uther, PhD
 William Uther, MSc PhD Carnegie Mellon BSc
 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 Mathematical Statistics (Personal Chair)
 John Robinson, BSc *Qld* PhD. Appointed 1991

Professor in Pure Mathematics (Personal Chair)
 Gustav I Lehrer, PhD *Warw* BSc, FAA. Appointed 1990

Professors

John J Cannon, MSc PhD. Appointed 2000
 Edward Norman Dancer, BSc *ANU* PhD *Camb*, FAA. Appointed 1993
 Nalini Joshi, MA PhD *Prin* BSc. Appointed 2002

Readers

Donald I Cartwright, PhD *Ill* 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*
 Ronald W James, BSc PhD
 Charles C Macaskill, BSc PhD *Adel*
 Malcolm P Quine, MSc *Lond* PhD *ANU*
 Neville C Weber, MSc PhD

Director of Junior Studies

Sandra C Britton, BSc *NSW* MA

Senior Lecturers

Peter W Buchen, PhD *Camb* BSc
 Christopher M Cosgrove, BSc PhD
 David Easdown, BA *ANU* PhD *Monash*
 David J Galloway, BA PhD *Camb*
 Jenny Henderson, DipEd *Flin* MSc
 David J Ivers, BSc PhD
 Hugh C Luckock, BSc *Auck* PhD *Newcastle (UK)*, ASIA
 Andrew P Mathas, BSc MSc PhD *Ill*
 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
 M Shelton Peiris, DipMath MSc *Peradeniya* PhD *Monash*
 Mary C Phipps, MSc
 Rosemary S Thompson, BSc *ANU* PhD
 James N Ward, BSc PhD
 Ruibin Zhang, BSc *Shandong* PhD *Tas*

Lecturers

Sanjeeva Balasuriya, BS *Lafayette* ScM PhD *Brown*
 Howard J D'Abbrera, PhD *Calif* BSc
 Daniel Daners, PhD *Zurich*
 David J Ivers, BSc PhD
 David R Kohel, BSc *Texas A&M* PhD *Berkeley*
 Adrian M Nelson, PhD *Lond* BSc
 Laurentiu Paunescu, MSc *Bucharest* PhD
 Marc E Raimondo, MSc DipStats PhD *Paris VII*
 Michael I Stewart, BSc MA PhD
 Qiying Wang, BSc *Anhui* MSc *S & T China* PhD *Woll*

ARC Australian Professional Fellow

Leon Poladian, PhD GradDipEd *NE*

Postdoctoral Fellows

Anthony Henderson, PhD *MIT* BSc
 Shusen Yan, MS *South China UnitTech* PhD *Wuhan Inst*

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

Claus Fieker, DipMath *Heinrich-Heine* PhD *Berlin*
 Georg Gottwald, PhD *Monash* Diploma *Düsseldorf*

Senior Research Associates

Leslie Farnell, MA DPhil *Oxf* DipEd *Canberra*
 Alan K Steel, BA
 Robin Steel, BSc *Edin* MSc *Napier* PhD *Wales*
 William R Unger, PhD

Research Associate

Geoffrey M Bailey, BSc

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, BSc BIT *CSturt* ADipA *Mitchell CAE*
 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 Doyle
 Sonia Morr

Emeritus Professors

Gregory M Kelly, BA PhD *Camb* BSc, FAA
 Eugene Seneta, MSc *Adel* PhD *ANU*, FAA. Appointed 1979
 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
 Herbert E Huppert, FRs
 Kenji Kajiwara, BSc MSc PhD *Tokyo*
 Mark Watkins, BSc PhD

Honorary Reader

Tzee-Char Kuo, BS *Natnl Taiwan* PhD *Chic*

Honorary Associate Professors

Christopher J Durrant, MA PhD *Camb*
 Edward D Fackerell, MSc PhD
 Terence M Gagen, BSc *Qld* PhD *ANU*
 John M Mack, MA *Camb* BSc PhD
 Robert FC Walters, MSc *Qld* PhD *ANU*
 Denis E Winch, MSc PhD, FRAS

Honorary Senior Lecturer

W Barrie Fraser, BSc ME *Cant* SM PhD *Harv*
 Karl H Wehrhahn, BSc *Alta* PhD

Honorary Associates

Geoffrey R Ball, BA
 Donald W Barnes, DPhil *Oxf* BSc
 A J Berrick, PhD
 Koo-Guan Choo, BSc *Nan* MSc *Ott* PhD *BrCol*
 Clare Coleman, PhD
 Diana Combe, MSc *London* BSc PhD
 Wen Dai, BSc *Yunnan* MSc *Beijing* PhD *ANU*
 Roger W Eyland, PhD *Camb* MSc
 Humphrey M Gastineau-Hills, MSc PhD
 Volker Gebhardt, PhD
 John Graham, PhD
 Brian Gray, BSc PhD *Manc*, FRACI FRSC

8. Staff

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*
Rupert Littlewood, PhD
Ben Martin, PhD
Leanne Rylands, MSc PhD
Ross H Street, PhD
Jonathan Turner, 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, BA DPhil *Oxf*
Alan R Jones, PhD *Manc*
Emma Whitelaw, BSc *ANU* DPhil *Oxf*

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)*

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 *NSW* PhD *Camb*

CJ Martin Fellow
Anne E Peaston, PhD *NSW* BVSc GradDipVetClinStud, FACVS
DipACVIM

Research Fellows
Adrienne Adams, BSc PhD *Melb*
Bogdan E Chapman, BSc PhD *ANU*
Margaret Sunde, BSc *Cape Town* PhD *Camb* (part-time)
Allan H Torres, BSc *UPLB* PhD *Alberta*

Proteomics Research Fellow
Ben Crossett, BSc *Manc* PhD *Camb*

NHMRC Australian Clinical Research Fellow
Shameran Slewa-Younan, BA PhD

ARC Australian Postdoctoral Fellow
David A Gell, BSc PhD *Camb*

Sesqui Postdoctoral Fellow
Megan J Maher, BSc *Qld* BSc PhD *Melb* (part-time)

Postdoctoral Fellows
Suyinn Chong, BAppSc PhD *UTS*
Muireann Coen, BSc PhD *Lond*
Anthony P Duff, BSc PhD *NSW*
Felix J Kobus, BMedSc PhD (part-time)
David Langley, BSc PhD
Jason A Lowry, BS *Case W Reserve* PhD *NCarolina State*
Neelan J Marianayagam, BS *Calif Irvine* MPhil PhD *Camb*
Suzanne M Mithieux, BSc *NSW*
Konstantin Momot, BSc *Novosibirsk* PhD *Arizona*
Richard C Pearson, BSc PhD *Lond*
Sharon Pursglove, BSc *Woll* PhD *Adel*
Rachel N vanden Hoven, BSc *LaTrobe*
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*
Karl R Schultz, BAgSc *Adel*
Ross I Taylor, FittMachCert ToolmakingCert *STC*

Technical Officers
John C Foster, BSc *NSW* GradDip (EnvStud) *Macq*
Cesar De La Paz
Debra Phillips, QTACert *NZIMLT* (part-time)

Research Assistants
Camilla W-J Chan, BSc
Sarah J Hemley, BBiotech *Woll*
Caroline Leong, BMedSc
Amy L Nancarrow, BA/BSc (part-time)
Orsola M Regaglia, BSc *WSyd*
Raina J Simpson, BSc(Adv)
Regina Zabaras, BSc MSc(Hons) *WSyd*

Laboratory Assistants
Margaret Espejel, AssocDipMedSc *Riverina CAE*
Peter W Kerr
Ben Monaghan, DipHealthSc *TAFE NSW*

Research Technician
Gang Chen

Glassware Cleaners
Joyce Menouhos (part-time)
Lynette T Menouhos (part-time)
Margaret Ramsay (part-time)
Jun Wang

Honorary Appointments

Emeritus Professors
Hans C Freeman, MSc PhD, FAA FRACI FRSC CChem
Clifford H Gallagher, PhD *Lond* DVSc, FACVSc FRCPath
Noel S Hush, DSc *Manc* 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

Honorary Associates
Nihal S Agar, MVetSci PhD *Agra*
Renze Bais, BSc PhD *Adel*
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*

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, 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

Senior Lecturer
 Karen Webb, BSc MPH UC *Berkeley* 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
 Anna M Rangan, BSc *Griff* DipNutrDiet *QIT* PhD *Curtin* (part-time)

Research Manager, IOTF
 Timothy P Gill, BSc *Tas* BSc GradDipDiet PhD *Deakin*

Clinical Trials Manager
 Philippa V Lee

Professional Officer
 Ziaul I Ahmad, MAppSc *UTS*

Technical Officer
 Jenny L Phuyal, AnimTechCert *TAFE NSW* (part-time)

Administrative Assistants
 Marianne Alexander (part-time)
 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 Lecturers
 Margaret Nicholson, BSc DipNutrDiet DipEd *MED*
 Beth Rohrlach, BSc DipNutrDiet, APD

Honorary Associate Lecturers
 Suzie Ferrie, GradDipFoodTech *NSW* BSc MNutrDiet
 Sue Radd, BSc GradDipDiet *Deakin*
 Nicola Riley, BSc MNutrDiet

Honorary Associates
 John F Ashton, BSc PhD *Newcastle (NSW)* MSc *Tas* , FRACI
 Timothy P Gill, BSc *Tas* BSc GradDipDiet PhD *Deakin*
 Robert J Parker, MEd PhD DipEd, FACHPER

Honorary Clinical Supervisors
 Caroline Adams, BSc DipNutrDiet *Deakin*
 Karen Allsopp, BSc *Aberd* MNutrDiet
 Sami Azad, BSc *Iraq* MSc *Rdg* PhD DipNutrDiet
 Lisa Brearley, BSc *Melb* MSc(NutrDiet) *Woll* MHN *Deakin*
 Lyn Brown, DipIM CertDiet *Melb*
 Jose Cabello, DipNutrDiet *Chile*

Michele Carroll, BHLthSc (NutrDiet) *Newcastle (NSW)*
 Charlotte Denman, BSc DipNutrDiet *Deakin*
 Debbie Edward, BSc HEC(NutrDiet) *MtStVin* GradDipEdStud
 Lisa Eldridge, BSc MNutrDiet
 Rebecca Fisher, BSc(ExSc&Nut) MSc(NutrDiet) *Woll*
 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 Holyday, BSc DipNutrDiet
 Michelle Hughes, BSc DipNutrDiet
 Kieu Huynh, MHealthAdmin GradDipFoodTech *NSW* BSc MNutrDiet
 Christine Josephson, BSc GradCertMgmt *Canada*
 Louise Kefford, BSc MNutrDiet
 Meredith Kennedy, MSc(NutrDiet) *Woll*
 Josephine Kirkwood, BAppSc (BiomedSc) *UTS* , MNutrDiet
 Caryn Kneale, BSc *Macq* MNutrDiet
 Lyn Lace, BSc DipNutrDiet
 Robert Lange, BSc *Qld* GradDipNutrDiet *QldUT* GradCertDia-
 betesEduc *Deakin*
 Marion Lee, BSc CertDiet
 Maria Loveday, BSc *Deakin* CertDiet *Vic*
 Nasseem Malouf, MSc *Beirut* PhD DipNutrDiet
 Jennifer McArthur, MHPed *NSW* BSc DipNutrDiet
 Jenny McDonnell, BSc DipNutrDiet
 Jenny McQueen, BSc MHLthSc GradDipDiet GradDipInfoStud
 Marcelle Middleton, BSc *ANU* DipNutrDiet
 Lesley Miller, BSc DipNutrDiet
 Radha Murthi, MNutrDiet *Madras*
 Margaret Nicholson, BSc DipNutrDiet DipEd *MED*
 Gillian Nisbet, BSc DipNutrDiet
 Nola Patterson, BSc *Qld* DipNutrDiet
 Tracey Patricks
 Aditi Patwardhan, BSc MNutrDiet
 Joanne Prendergast, BSc *Acad Pdt Montr* MHPed *NSW*
 Nicola Riley, BSc MNutrDiet
 Beth Rohrlach, BSc DipNutrDiet
 Elizabeth Scott, BSc DipNutrDiet
 Marie Smith, MNutrDiet
 Karen Storer, BSc MNutrDiet
 Lydia Sutakowsky, BSc *Qld* DipNutrDiet *UTS*
 Anne Swain, BSc DipNutrDiet PhD
 Peter Talbot, BSc MSc(Med) DipNutrDiet
 Jayne Taylor, MNutrDiet
 Scott Wagner, BSc DipNutrDiet GradCertPaedDiet
 Kellie Ward, BHSc(N&D) *Newcastle (NSW)*
 Bill Wedgewood, BSc GradDipDiet *Deakin*
 Natalie Wilson, MSc(NutrDiet) *Woll*

Honorary Community Supervisors
 Soumela Amanatidis, BSc DipNutrDiet MPH
 Rudy Bartl, BSc DipNutrDiet
 Kathy Chapman, BSc MNutrDiet
 Annelise Davidson, BAppSc(FoodNutr) *WSyd* MNutrDiet
 Gina Davis, MSc *Qld* DipNutrDiet *QldUT*
 Jane Dibbs, BSc DipNutrDiet
 Susan Dumbrell, BSc MNutrDiet
 Pam Gollow, BAppSc GradDipDiet *WAIT* MPH *NTerritory*
 Trish Griffiths, GradDipCommM *UTS* BSc DipNutrDiet MPH
 Louise Houtzager, MSc(NutrDiet) *Woll*
 Effie Houvardes, MSc(NutrDiet) *Woll*
 Judith Leahy, BSc *NSW* DipNutrDiet
 Janine Lewis
 Melissa Macdouall, BHLthSc(NutrDiet) *Newcastle (NSW)*
 Melinda Morrison, MSc(NutrDiet) *Woll* GradCertDiabEd *Deakin*

Catherine Offner, BHLthSc(NutrDiet) *Newcastle (NSW)*
 Trish Ryan, BAppSc(FoodNutr) GradDipDiet *WAIT*
 Simon Sadler, BHLthSc(NutrDiet) *Newcastle (NSW)* MPH
 Lynette Stewart, BScAgr BA DipNutrDiet *Macq*

Honorary Food Service Supervisors
 Susan Burke, BSc DipFoodTech *NSW* DipNutrDiet

8. Staff

Ruth Crawford, BSc *Deakin* MNutrDiet *Flin* GradDipEd CertS-portsNutr *Melb*
Gladys Hitchen, MSc(NutrDiet) *Lima*
Andrew Howie, BSc DipNutrDiet
Maria Kokkinakos, BSc DipNutrDiet
Carmel Lazarus, BSc MNutrDiet GradDipBusAdmin *UTS*
Fifi Spechler, BSc DipNutrDiet
Carol Zeuschner, BSc GCertHlthMgmt MSc(NutrDiet) *Woll*

Honorary Industry Supervisors

Rebecca Bousted, BSc MSc (NutrDiet) *Woll*
Yvonne Bowyer
Veronique Droulez
Sara Grafenauer, BSc(Nutr) MSc(NutrDiet) *Woll*
Trish Guy, BHLthSc(NutrDiet) *Newcastle (NSW)*
Sharon Natoli, BSc BNutrDiet *Flin* GradDipBus *RMIT*
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*
Peter B New, BAgSc *Tas* PhD *Adel*

Lecturer

Helen M Agus, MSc *NSW* , MASM

NHMRC Principal Research Fellow

Ruth M Hall, PhD *Edin* DipEd *Monash* MSc

ARC Australian Postdoctoral Fellow

Manuela Dieckelmann, BSc PhD *Griff*

Postdoctoral Fellows

Nicholas V Coleman, PhD
Liam Elbourne, PhD

Research Assistants

Tien M T Bui, BMedSc
Kathy M Donohoe, BSc (MolBiolGen)
Shona J Seeto, BSc
Gordon Stevenson, BSc *Adel*

Technical Officers

Emma Hastings, BSc
Vincent Lai, BMedSc

Laboratory Assistant

Georgina Nield, DipLabTech *TAFE NSW*

Glassware Cleaners

Ana M Julca (part-time)
Trudie T Smith (part-time)

Honorary Appointments

Adjunct Senior Lecturer

Ruiting Lan, BScAgr *Jiangxi* PhD

Honorary Associates

K Yip Cho, BSc *NSW* PhD *ANU*
William G Murrell, PhD *Oxf* DScAgr, FAIFST MASM

Molecular Biotechnology

Professor and Director

Anthony S Weiss, BSc PhD

Senior Lecturer

Kevin Downard, BSc PhD *Adel*

Lecturers

Rachel Codd, BSc *Macq* PhD
Neville Firth, BSc PhD *Monash*

Molecular Biotechnology Program Coordinator

Vacant

Honorary Appointments

Adjunct Professor

Keith Williams, BAgSc *Melb* PhD *ANU*

School Administrative Staff

Laboratory Manager

Terry P Brown, MASM

Information Technology Officer

Douglas J Chappell, BA BSc PhD DipEd

Computer Systems Manager

Jennifer Wong, BSc

Computer Systems Officer

David Chandraratnam, BSc

Senior Administrative Officer

Danielle Wells, BSc *NSW* (part-time)

Senior Finance Officer

Stephen P Conaghan

Administrative Officer – Student Support

Jenny Woodward

Administrative Assistants

Annie Au
Michelle Dulanis
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 T* PhD *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 MRCPPath

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 Department

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
Laurent P Rivory, BVSc PhD Qld

Lecturer

Jonathan C Arnold, BSc 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 Manc 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
David IB Kerr, BSc PhD Adel
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 Professor

Richard N Manchester, BSc Cant PhD Newcastle (NSW)

Adjunct Associate Professors

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
Ian J Cooper, BSc MPhys DipEd NSW
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
Peter A Robinson, BSc PhD
Catherine Stampfl, BSc(Hons) PhD LaTrobe

Australian Professorial Fellows

Iver H 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

Eric Magi, BSc ANU PhD NSW
Mark A Walker, BA Oxf PhD Penn
Oliver Warschkow, BSc PhD Toronto

ARC Queen Elizabeth II Research Fellow

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
Angus Gray-Weale, BSc DPhil Oxf
Seyed Reza Hashemi-Nezhad, MSc PhD Birm
Qinghuan Luo, BSc NIHM MSc Heilongjiang PhD
Eduard N Tsoy, MSc St Petersburg PhD Tashkent
Yongbai Yin, MSc Nankai PhD

ARC Postdoctoral Research Fellows

Nelson K L Ng, PhD
Kostyantyn Ostrikov, DSc Kharkov
Andrew J Willes, PhD

Postdoctoral Fellows

Turgut Bastug, MSc DSc Kassel
Stephen Bosi, BSc PhD NSW
Julia J Bryant, PhD
Kerrie Davies, BSc PhD NSW
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
Boris T A Kuhlmei, PhD
Manfred Lenzen, PhD Dip Bonn
Bo L Li, MSc Nankai PhD JCUNQ
Richard Morrow, BSc Adel PhD Flin BA

8. Staff

Senthilvelan Murugaian, BSc *Madras* MSc MPhil PhD *Bharathidasan*
 Maitreyee Roy, MSc MPhil *rani Dorgauati* PhD
 Sergiy Vynogradov, DSc PhD *Kharkov*
 Jeanette I Weise, BSc PhD *Melb*
 Mofreh Zaghloul

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
 Damien Buie, PhD
 Xiangyuan Carl Cui
 Peter Drysdale, BSc LLB PhD
 Alexander Fuerbach
 Blanca Gallego
 Christian E Grillet
 Shiqiang Hao
 Daniel F Hevia
 Aristeidis Karastergiou
 Claire Lynga
 Neil Nosworthy
 Rebecca Powles
 Hongqing Shi
 Richard Tarrant, BA MSc PhD
 Snjezana Tomljenovic-Hanic
 Xingqiu Yuan

Julius Sumner Miller Fellow

Karl Kruszelnicki, BSc MBioMedE *NSW* MBBS

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 Naphthali
 Barry Naphthali
 Myo Win

Computing Staff

Sebastian Juraszek, PhD
 Anthony Monger, PhD
 Guoliang George Shan

Technical Officers

Robert Davies
 Phil Denniss
 Barbara Piestrzynska
 Lai Chun So

School Administration Manager

Paul Harbon, MBA DipMngmt *Deakin* DipMath *SQld* BSc

Outreach Officer

Owen Shepherd, BSc *NSW*

Student Support Office

Hannah Jurd
 Eve Teran, BSc

Finance

Nelly Leh Hwa Liew
 David Young

Personnel and Administrative Officer

Chindy Praseuthsouk, DipHRMngmt *SIT* BA

Administrative Assistants

Hyacinth Alfonso
 Natalie Lazor

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

John Barry
 Adrian Blake
 Greg Kingston

Emeritus Professors

Richard Edward Collins, BSc PhD *NY*
 John Davis, BSc PhD *Manc*
 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 McInnes, BSc PhD *Qld*
 Lawrence S Peak, PhD
 Murray Winn, BSc PhD *Birm*

Honorary Senior Lecturers

Roy Allen, BSc PhD *Manc*
 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
 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
 Joss Bland-Hawthorn, BSc *AU Birm* PhD *Sus & RGO*
 Lindsay C Botten, BSc *Tas* PhD
 Michael Breakspear, BA BSc MBBS
 Aliz Derekas
 Pal Fekete, PhD
 Catherine Foley, BSc DipEd *Macq* PhD
 Parameswaran Hariharan
 Julianne I Harnett, BA *Macq* DipT *Tas* CAE PhD
 Kirsten Hogg
 Stuart Jackson
 David L Jauncey, PhD
 Simon Johnston, BSc *Edin* PhD *Manc*
 Ramzi Kutteh, BS *Pittsburgh* MS *PolyInst NY* PhD *Purdue*
 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 Stell
 Martin van Eijkelenborg
 Mark J Wardle, MSc *Auck* PhD *Prin*
 Michael White
 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 Cottey, BSc PhD (half-time & Research Officer)
 Miriam Frommer, PhD *Lond* BSc
 Margot Day, BSc PhD
 Ann Goodchild, BSc PhD

Lecturers

Françoise Janod-Groves, BSc *NSWIT* MAppSc *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*
 Il 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, Lic*
 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 Polytechnic* CEI 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 T* BSc *Witw* . Appointed 1996

Professors

Alex Blaszczyński, MA PhD *NSW* . Appointed 2001
 Phyllis Butow, MCLinPsych *ANU* PhD. Appointed 2004

8. Staff

Associate Professors

David Grayson, BA PhD
Iain McGregor, MA Oxf PhD
Leanne Williams, BSc 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 MCLinPsych NSW PhD
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
Shamiealah 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 Lanc MPsych PhD Macq
Reinhard Ronnebeck, BA Mich MA PhD Houston
Timothy Sharpe, BSc MPsych NSW PhD
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

Associate Professor and Director, NWG Macintosh Centre for Quaternary Research
Michael Barbetti, BSc WAust MSc Maniit PhD ANU

Senior Lecturers
Allan S Jones, BAppSc UTS PhD NSW
Huai Y Zhu, BSc Inner Mongolia MSc Nankai PhD Antwerp

Lecturers
Vicki J Keast, MS PhD Lehigh BSc
Carolyn Dillon, PhD

Research Associates
Anyah Salih, MSc Khartoum PhD
Dan Penny, PhD Monash
Pall Thordarson, BSc Iceland PhD
Zhaohui Han, PhD UST China
Andrei Reztsov, PhD Moscow
Huanting Wang, PhD Univ. Sci. & Tech. China
Zhongwen Liu, PhD

Associate Lecturers
Wendy Reade, BAppSc Canberra GDipAncientDoc Macq BA
Kyle Ratnac, BE PhD NSW
Lisa Stadtmueller

Technical and Professional Staff
Eleanor P Kable, BSc Griff MSc Qld (Lab. Manager)
Rosie Hicks (General Manager)
Dennis M Dwart, BSc NSW MSc
Ian J Kaplin, MSc PhD NSW BSc(CE)
Peter Hines, BME PhD
Miles Apperley, PhD NSW
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
Athur 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 AssocDipWelfareWork 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 Louisiana State BA

Members
Eleanor M Bruce, PhD WAust
David E M Chapman, MEngSc NSW BA PhD
Peter J Cowell, BA PhD

Unit for History and Philosophy of Science

Director
Rachel A Ankeny, BA St John's College MA PhD Pitt

Lecturers
Ofer Gal, BA MA Tel Aviv PhD Pitt
Jason Grossman, MA Cantab MPH
Hans Pols, MA York MA Groningen PhD Penn
Michael Selgelid, BSE Duke MA PhD Cal San Diego

Visiting Professors
Evelleen Richards, BSc Qld MA PhD NSW
Alan Chalmers, BSc Brist MSc Manc PhD Lond

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 PhD
Alison Bashford, PhD
David Braddon-Mitchell, BA PhD ANU
Stephen Gaukroger, BA Lond BA PhD Cantab, FAHA
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 Hawckett, BSc DipEd PhD

Postdoctoral Research Fellows

Hank De Bruyn, PhD

Nirmesh Jain, BSc MSc PhD SGU

Thi Thuy Binh Pham, MSc Hanoi

Ewan Sprong, PhD Stell

Matthew Tonge, PhD

Laboratory Manager

Reza Mahidasht, MEM UTS PhD Belgrade

Research Assistants

Jelica Strauch, BAppSc (Materials) (Hons) UTS

Hollie Zondanos

Technical Officers

Duc Ngoc Nguyen, BSc (Hons) WSyd

Douglas J Willoughby

Senior Administrative and Finance Officer

Trisanti Santosa

Administrative Assistant

Patricia Matterson

Adjunct Lecturer

Richard Hughes, BSc

Honorary Research Associates

Peter Hidi, MSc Bud , FRACI MIACIS

David Sangster, BSc(Hons), FRACI

University of Sydney Institute of Marine Science

Director

Dietmar Müller, BSc Kiel PhD Calif

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

Carmen Gaina, MSc PhD

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 NSW PhD 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 Chapple, 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

Administrative Officer

Maria Cardona

9. Scholarships

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

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 Web site (<http://www.usyd.edu.au/study/scholarships.shtml>) and from the Research Office Web site (<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 Web sites 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	6	Awarded to highly ranked University of Sydney Undergraduate Scholarship applicants who do not obtain one of those scholarships. Minimum UAI 98.
Science Entry Scholarship	\$2000	1	6	Awarded to highly ranked University of Sydney Undergraduate Scholarship applicants who do not obtain one of those scholarships. Minimum UAI 98.
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.
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.
Biology Entry Scholarship	\$2000	1	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	1	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	1	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	1	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	1	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	1	1	Awarded automatically on the basis of UAI to students entering the BLibStud. Cannot be held with other scholarships of equal or greater value.

9. Scholarships

Mathematics Entry Scholarship	\$2000	1	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	1	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	1	2	Awarded automatically on the basis of UAI to students entering the BMedSc. Cannot be held with other scholarships of equal or greater value.
Physics Entry Scholarship	\$2000	1	2	Awarded automatically on the basis of academic merit in the HSC to intending BSc Physics majors. Cannot be held with other scholarships of equal or greater value.
Psychology Entry Scholarship	\$2000	1	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).
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.
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 with Merit	\$5000	5	approx 24	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.
University of Sydney Scholarships	\$5000	1	approx 60	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.
University of Sydney Outstanding Achievement Scholarships	\$5000	5	varies	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.
Commonwealth Learning Scholarships				Please refer to the following web site for details: www.usyd.edu.au/fstudent/undergrad/study/shm/schol_cls.shtml .
Access Scholarships	\$4000	5	approx 60	Access Scholarships are available to students who demonstrate academic ability as well as meeting the criteria of one or more of the following categories: financial disadvantage, disability or rural/remote area. Applications to the Scholarships Unit by 30 September in the year preceding first enrolment.

Bruton Educational Trust Scholarship	\$10000	5	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.
Barker Scholarship No. III	\$600	1	1	Awarded automatically after enrolment for proficiency in Mathematics in the HSC. Must enrol in 12 credit points of Junior Mathematics in the Faculties of either Arts, Engineering or Science.
E. Trenchard Miller Memorial Scholarships	\$1000	5	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 Junior 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.
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.
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.
Henry Chamberlain Russell Prize	\$1400	1	1	Essay, thesis or research report on Astronomy.

9. Scholarships

Korner Prize	\$100	1	1	Awarded for proficiency in the Intermediate year of the Bachelor of Medical 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				
Commonwealth Learning Scholarships				Please refer to the following web site for details: www.usyd.edu.au/fstudent/undergrad/study/shm/schol_cls.shtml .
Continuing Undergraduate Scholarship	\$5000	1	approx 60	Awarded without application to continuing undergraduate students in the Faculty of Science on the basis of merit.
Full Fee Scholarship	\$4000	1	varies	Awarded on the basis of equity to new students and continuing students. Valued at \$4000 to be offset against course fees.
Honours Scholarship	\$5000	1	approx 60	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 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				
<i>Anatomy and Histology</i>				
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.
<i>Biological Sciences</i>				
Mary Besly Memorial Prize	\$100		1	Merit in Intermediate or Senior invertebrate zoology.
Ilma 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.
Haswell Prize	\$120		1	Proficiency in 24 credit points of Senior zoology.
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.

<i>Chemistry</i>				
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.
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.
Inglis Hudson Scholarships	1 x \$300 & 2 x \$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.
<i>Environmental Science</i>				
University of Sydney Prize for Junior Environmental Science	\$1000		1	For the best performing student in the two Junior ENVI units of study in the BSc (Environmental) degree program.
University of Sydney Prize for Intermediate Environmental Science	\$1000		1	For the best performing student in the two Intermediate ENVI units of study in the BSc (Environmental) degree program.
University of Sydney Prize for Senior Environmental Science	\$2000		1	For the best performing student in the two Senior ENVI units of study in the BSc (Environmental) degree program.
University of Sydney Achievement Prize in Environmental Science	\$500		1	For the student who shows the greatest improvement in performance when comparing the results for the Senior ENVI units of study to those of the Intermediate ENVI units of study. This prize cannot be awarded in conjunction with the Senior Environmental Science prize.
University of Sydney Prize for Honours in Environmental Science	\$500		1	For the best performing student in the honours year of the BSc (Environmental) degree program.
<i>Geosciences</i>				
AusIMM: Charles Marshall Thesis Prize			1	Proficiency in Honours in a mining related field.
AusIMM: Mining and Metallurgical Bursaries	\$500 + \$100 book voucher		3	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.

9. Scholarships

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.
MIM Explorations Honours Scholarship in Economic Geology	\$6000	1	1	A scholarship for an honours student to undertake research in economic geology, or exploration geophysics. Students should send an application stating why they feel their results and future potential are deemed to be outstanding; including their past academic record together with a brief c.v., and also indicate the project they wish to undertake. Applications must be endorsed by the School of Geosciences. Applications close 31 January each year.
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.
W.H. 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.

9. Scholarships

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.
<i>History and Philosophy of Science</i>				
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.
<i>Information Technologies</i>				
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.
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.
<i>Marine Science</i>				
Prize in Marine Sciences	\$100			Merit in Senior Marine Science
<i>Mathematics and Statistics</i>				
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 STAT3905 Markov Processes Advanced who demonstrates the greatest proficiency.

9. Scholarships

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 48 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 16 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 student who enrolls 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	\$5650		1	To the most outstanding student completing fourth year Honours in Applied Mathematics, Pure Mathematics or Mathematical Statistic
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 the combined units of study STAT 1021 and 1022.
Wadsworth Publishers Prize	\$125		1	For proficiency in Junior Mathematics.
<i>Molecular and Microbial Biosciences</i>				
Allman Prize	\$300	1	1	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	1	Awarded for greatest proficiency in the units of study MBLG 2771/2871 or MBLG 2971 and BCHM 2072/2972, provided that the student's work is of sufficient merit.
Roslyn Flora Goulston Prize	\$530		1	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.
Sigma-Aldrich Molecular Biotechnology Second Year Award	\$300	1	1	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	1	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		1	Awarded for proficiency in the units of study MBLG 2771/2871 and BCHM 2072/2972.
Sydney Chinese Association Prize	\$100		1	To the student in the Faculty of Science or Agriculture who shows the greatest proficiency in the units of study MICR (3001 or 3901) and (3002 or 3902 or 3003 or 3903), or Agricultural Microbiology MICR 3102 or in TSP units in Microbiology.
<i>Pharmacology</i>				
Dorothy Thorp Prize in Science Communication	\$200		1	Merit in Pharmacology Honours.
Roland H. Thorp Prize	\$200		1	Merit in Senior Pharmacology.
<i>Physics</i>				
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.
Denison Postgraduate Award	\$1500	3	1	To the most academically-able new PhD student who has met the eligibility criteria for the APA/UPA awards
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 enrolls 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 enrolls 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 enrolls in 24 credit points of Senior Physics.
Science Foundation for Physics Scholarships No. 3	\$900	1	5	Up to five scholarships for proficiency in Senior Physics, provided that the student enrolls 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 not already enrolled in the School of Physics, who has completed a major in Physics or equivalent and has achieved a result of at least Distinction (or equivalent) in their final year of 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.

9. Scholarships

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.
<i>Physiology</i>				
Claude Bernard Prize	\$150		1	Proficiency in PHSI 3003/3903.
Colin Dunlop Prize	\$100		1	Merit in Physiology Honours.
Frank Cotton Memorial Prize	\$250		1	For merit in PHSI 3004 Human Cellular Physiology or PHSI 3904 Human Cellular Physiology (Advanced)
Y E Knight Neuroscience Essay Prize	\$100		1	For the best essay or report in PHSI 3001/3901.
David J. Monk Adams Award	\$600		1	Travel assistance for a student enrolled in Physiology Honours.
<i>Psychology</i>				
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		1	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		1	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	\$650	1	1	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	\$650	1	1	Awarded for proficiency in PSYC 2111 and 2112, PSYC2113 and 2114. The scholar is required to attend a minimum of 32 credit points of Psychology 3000 level units of study.
Lithgow Scholarship No. VII	\$650	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		1	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.
<i>Westmead Institute for Cancer Research</i>				

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)	\$17609	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.
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.

9. Scholarships

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).
<i>Faculty of Science</i>				
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.
<i>Geosciences</i>				
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 enrolls as a full-time research student in the following year.
Master of Information Technology Half-fee Semester Scholarship	Varies		varies	Awarded to meritorious Master of Information Technology students enrolling in Semester 1 or Semester 2, 2005.
<i>Mathematics and Statistics</i>				
T G Room Medal	Medal		1	For a PhD thesis in Pure Mathematics which is considered of outstanding merit.
<i>Molecular and Microbial Biosciences</i>				
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.
<i>Physics</i>				
Denison Postgraduate Award	\$17609	3	1	Scholarship holders must be enrolled for a full time Doctoral postgraduate research degree at the University of Sydney.
Denison Merit Award	Varies	3.5	1	Scholarship holders must be enrolled for a full time Doctoral postgraduate research degree at the University of Sydney.
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.
<i>Psychology</i>				
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.

9. Scholarships

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	\$250		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	\$250		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.
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.



Science subject area index

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

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

Databases *see* Computer Science

Developmental Biology *see* Biological Sciences, BMedSc, Anatomy and Histology

Developmental Psychology *see* Psychology

Dietetics *see* Biochemistry, BMedSc, BSc(Nutrition), Postgraduate study: MNutrSc and MNutrDiet

Disease *see* Biochemistry, BMedSc, BSc (Molecular Biotechnology), Cell Pathology, Immunology, Microbiology

Drugs *see* Biochemistry, BMedSc, BSc (Molecular Biotechnology), Chemistry, Pharmacology

DNA Technology *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biotechnology), Physiology

Earth Evolution *see* Geology and Geophysics, Geography

Ecology *see* Biological Sciences, Microbiology

Economic Geology *see* Geology and Geophysics

Electrochemistry *see* Chemistry

Electromagnetism *see* Physics

Electron Microscopy *see* Australian Key Centre for Microscopy and Microanalysis, Anatomy and Histology, GradDipAppSc (Microscopy and Microanalysis), MAppSc (Microscopy and Microanalysis), Physics

Embryology *see* Anatomy and Histology

Endocrinology *see* Biochemistry, BMedSc, Physiology

Energy Conservation *see* Chemistry, Physics

Energy Science *see* Chemistry, Physics

Entomology *see* Biological Sciences

Environmental Pollution *see* Agricultural Chemistry and Soil Science, BSc(Environmental), BSc (Molecular Biotechnology), Chemistry, Geography, Marine Sciences, Microbiology

Environmental Science *see* Agricultural Chemistry and Soil Science, Biological Sciences, BSc (Environmental), Graduate Applied Science (Environmental), , Master of Environmental Science and Law, MSc (Environmental), Chemistry, Geography, Geology and Geophysics, Microbiology, Physics

Enzymes *see* Agricultural Chemistry and Soil Science, Biochemistry

Epidemiology *see* Mathematics and Statistics, Microbiology

Ethics and Science *see* HPS

Evolution *see* Biological Sciences, Geology and Geophysics

Expert Systems *see* Computer Science

Fibre Optics *see* Physics

Financial Mathematics and Statistics *see* Mathematics and Statistics

Fish Biology *see* Biological Sciences

Fisheries Biology *see* Marine Sciences

Fluvial Systems *see* Geography

Food Science *see* Agricultural Chemistry and Soil Science, Biochemistry, BSc(Nutrition), BSc (Molecular Biotechnology), Chemistry, Key Centre for Polymer Colloids, Microbiology, MNutrSc and MNutrDiet

Forensic Science *see* Anatomy and Histology, Biochemistry, Biology, BMedSc, Cell Pathology, Chemistry

Fungal Biology *see* Biological Sciences

General Relativity *see* Physics, Mathematics and Statistics

Genetics *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biology and Genetics), BSc (Molecular Biotechnology), Cell Pathology, Microbiology

Genetic Engineering *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biology and Genetics), BSc (Molecular Biotechnology), Microbiology

Geochemistry *see* Chemistry, Geography, Geology and Geophysics

Geographical Information Systems (GIS) *see* Agricultural Chemistry and Soil Science, Geography, Marine Sciences]

Geomagnetism *see* Mathematics and Statistics

Geometry *see* Mathematics and Statistics

Geomorphology *see* Geography, Marine Sciences

Geostatistics *see* Agricultural Chemistry and Soil Science, Mathematics and Statistics

Geophysics *see* Geology and Geophysics

Haematology *see* Histology, BMedSc, Immunology, Physiology

Histochemistry *see* Histology, BMedSc

Histology *see* Anatomy and Histology

History and Philosophy of Psychology *see* Psychology

History of Biomedical Science *see* HPS.

History of Science *see* History and Philosophy of Science

Human Life Sciences *see* Anatomy, Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biotechnology), Cell Pathology, Histology, Immunology, Physiology

Human Nutrition *see* Biochemistry, Master of Nutritional Science, Master of Nutrition and Dietetics

Hydrology *see* Agricultural Chemistry and Soil Science, BSc (Environmental), Geography

Image Processing *see* Physics

Immunology *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biotechnology), Cell Pathology, Immunology

Individual Differences *see* Psychology

Industrial Chemistry *see* Chemistry

Infectious Diseases *see* BMedSc, BSc (Molecular Biotechnology), Cell Pathology, Immunology, Microbiology

Inflammation *see* Cell Pathology, Immunology

Information Systems *see* Computer Science

Information Technology *see* Computer Science

Instrumentation *see* Physics

Inorganic Chemistry *see* Chemistry

Intelligence *see* Psychology

Intertidal Ecology *see* Biological Sciences, Marine Sciences

Invertebrate Zoology *see* Biological Sciences

Land Resources *see* Agricultural Chemistry and Soil Science, Geography

Lasers *see* Physics

Learning and Motivation *see* Psychology

Macromolecular Structure *see* Biochemistry, BSc (Molecular Biotechnology), Key Centre for Polymer Colloids

Magnetic Resonance Imaging *see* Chemistry, Biochemistry, BMedSc

Mammalian Biology *see* Biological Sciences

Marine Biology *see* Biological Sciences, Marine Science

Marine Ecology *see* Biological Sciences, Marine Science

Marine Geology *see* Geology and Geophysics, Marine Science

Marine Geophysics *see* Geology and Geophysics, Marine Science

Marine Science *see* Biological Sciences, Chemistry, Geography, Geology and Geophysics

Materials Science *see* Chemistry, Physics

Mathematical Modelling *see* Mathematics and Statistics, Physics

Mathematical Statistics *see* Mathematics and Statistics

Measurement Science *see* Physics

Medical Biochemistry *see* Biochemistry, BMedSc, BSc (Molecular Biology and Genetics), BSc (Molecular Biotechnology)

Medical Microbiology *see* BMedSc, Microbiology

Medical Molecular Biology *see* Biochemistry, BMedSc, BSc (Molecular Biology and Genetics), BSc (Molecular Biotechnology), Microbiology

Medical Physics *see* Physics

Medicinal Chemistry *see* Chemistry, BMedSc, BSc (Molecular Biotechnology), Pharmacology

Membrane Biology *see* Biological Sciences

Metabolism *see* Agricultural Chemistry and Soil Science, Biochemistry, Biological Sciences, BMedSc, Microbiology

Microanalysis *see* Australian Key Centre for Microscopy and Microanalysis, Chemistry, Physics, GradCertAppSc (Microscopy and Microanalysis), GradDipAppSc (Microscopy and Microanalysis), MAppSc (Microscopy and Microanalysis)

Microscopy *see* Australian Key Centre for Microscopy and Microanalysis, Agricultural Chemistry and Soil Science, Biological Sciences, BMedSc, Histology, Microbiology, Physics, GradCertAppSc (Microscopy and Microanalysis), GradDipAppSc (Microscopy and Microanalysis), MAppSc (Microscopy and Microanalysis)

Microtechniques *see* Histology, BMedSc

Mineralogy *see* Geology and Geophysics

Mineral Physics *see* Geology and Geophysics

Molecular Biology *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biology and Genetics), BSc (Molecular Biotechnology), Cell Pathology, Chemistry, Immunology, Microbiology, Physiology

Molecular Biotechnology *see* BSc (Molecular Biotechnology)

Molecular Engineering *see* BSc (Molecular Biotechnology), Chemistry

Molecular Genetics *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biology and Genetics), BSc (Molecular Biotechnology)

Molecular Modeling *see* BSc (Molecular Biotechnology), Chemistry, Pharmacology

Molecular Pharmacology *see* BSc (Molecular Biotechnology), Pharmacology

Molecular Physics *see* Physics

Morphology *see* BMedSc

Muscle *see* Cell Pathology, BMedSci, Physiology

Mycology *see* Biological Sciences, BMedSc

Natural Hazards *see* Geography, Geology and Geophysics

Natural Products Chemistry *see* Agricultural Chemistry and Soil Science, Chemistry

Neural Networks *see* Mathematics and Statistics, Physiology, BMedSc

Neuroanatomy *see* BMedSc, Anatomy and Histology

Neurochemistry *see* Pharmacology

Neuropathology *see* Cell Pathology

Neuropharmacology *see* BMedSc, Pharmacology

Neurophysics *see* Physics

Neurophysiology *see* BMedSc, Physiology, Anatomy and Histology

Neuroscience *see* Anatomy and Histology, BMedSc, Pharmacology, Physiology, Psychology

Nitrogen Fixation *see* Agricultural Chemistry and Soil Science, Biological Sciences, Chemistry, Microbiology

Nonlinear Analysis *see* Mathematics and Statistics

Nonlinear Optics *see* Physics

Nuclear Magnetic Resonance (NMR) *see* Chemistry, Biochemistry

Nuclear Physics *see* Physics

Nutrition *see* Biochemistry, BMedSc, Postgraduate study MNutrSc and MNutrDiet

Oceanography *see* Biological Sciences, Geology and Geophysics, Marine Sciences

Optics and Optical Fibres *see* Physics

Organic Chemistry *see* Chemistry

Organisational Psychology *see* Psychology

Organometallic Chemistry *see* Chemistry

Paleontology *see* Geology and Geophysics

Parasitology *see* BMedSc

Pathology *see* Cell Pathology

Pathogenicity *see* Microbiology

Pedogeomorphology *see* Geography

Pedology *see* Agricultural Chemistry and Soil Science

Perception *see* Psychology

- Personality** *see* Psychology
- Pesticide Chemistry** *see* Agricultural Chemistry and Soil Science, Chemistry
- Petrochemicals** *see* Chemistry
- Petroleum Geology** *see* Geology and Geophysics
- Petrology** *see* Geology and Geophysics
- Pharmaceutical Chemistry** *see* BSc (Molecular Biotechnology), Chemistry, Pharmacology
- Pharmacogenomics** *see* BSc (Molecular Biotechnology), Pharmacology
- Philosophy of Science** *see* History and Philosophy of Science
- Photonics** *see* Physics
- Phycology** *see* Biological Sciences
- Physical Anthropology** *see* Anatomy and Histology
- Physical Chemistry** *see* Chemistry
- Plant Management** *see* Biological Sciences
- Plant Metabolism** *see* Agricultural Chemistry and Soil Science, Biological Sciences
- Plant Molecular Biology** *see* Biological Sciences
- Plant Physiology** *see* Biological Sciences
- Plant Science** *see* Biological Sciences
- Plasma Physics** *see* Physics
- Plate Tectonics** *see* Geology and Geophysics
- Polymer Science** *see* Chemistry, Key Centre for Polymer Colloids
- Programming** *see* Computer Science
- Protein Crystallography** *see* Biochemistry
- Proteins** *see* Biochemistry, Chemistry
- Proteomics** *see* Biochemistry, BSc (Molecular Biotechnology)
- Protozoology** *see* Biological Sciences
- Psychological Assessment** *see* Psychology
- Public Health** *see* BMedSc
- Pure Mathematics** *see* Mathematics and Statistics
- Quantum Mechanics** *see* Chemistry, Physics
- Recombinant DNA Technology** *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biology and Genetics), BSc (Molecular Biotechnology), Microbiology, Physiology
- Resource Management** *see* Biological Sciences, Geography
- Respiratory disease** *see* Cell Pathology, Immunology
- Rheology** *see* Key Centre for Polymer Colloids
- River Systems** *see* BSc (Environmental), Geography
- Robotics** *see* Computer Science
- Scientific Revolution** *see* History and Philosophy of Science
- Sedimentology** *see* Geography, Geology and Geophysics, Marine Studies
- Social Relations of Science** *see* History and Philosophy of Science
- Social Psychology** *see* Psychology
- Sociology of Science** *see* HPS
- Software Engineering** *see* Computer Science
- Soil Chemistry** *see* Agricultural Chemistry and Soil Science, BSc (Molecular Biotechnology)
- Soil Physics** *see* Agricultural Chemistry and Soil Science
- Soil Science** *see* Agricultural Chemistry and Soil Science
- Solar Physics** *see* Physics
- Solid State Chemistry** *see* Chemistry
- Solid State Physics** *see* Physics
- Solid State Science** *see* Chemistry, Physics
- Space Physics** *see* Physics
- Spectroscopy** *see* Chemistry, Physics
- Statistics** *see* Mathematics and Statistics
- Structural Biology** *see* Biochemistry
- Structural Geology** *see* Geology and Geophysics
- Surface Science** *see* Chemistry, Key Centre for Polymer Colloids, Graduate Applied Science (Surface Coatings), Physics
- Systems Analysis** *see* Computer Science
- Therapeutics** *see* BMedSc, BSc (Molecular Biotechnology), Pharmacology
- Theoretical Chemistry** *see* Chemistry
- Theoretical Physics** *see* Physics
- Thermal Physics** *see* Physics
- Topographical Anatomy** *see* Anatomy and Histology
- Toxicology** *see* Chemistry, Pharmacology
- Vertebrate Zoology** *see* Biological Sciences
- Virology** *see* BMedSc, BSc (Molecular Biology and Genetics), BSc (Molecular Biotechnology), Microbiology, Pathology
- Volcanology** *see* Geology and Geophysics
- X-Ray Crystallography** *see* Chemistry, Biochemistry
- Zoology** *see* Biological Science

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 web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

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

Preliminary

Rules relating to Coursework Award Courses

Division 1 Award course requirements, credit points and assessment

Division 2 Enrolment

Division 3 Credit, cross-institutional study and their upper limits

Division 4 Progression

Division 5 Discontinuation of enrolment and suspension of candidature

Division 6 Unsatisfactory progress and exclusion

Division 7 Exceptional circumstances

Division 8 Award of degrees, diplomas and certificates

Division 9 Transitional provisions

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;

credit points mean 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% 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 sub-section (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 fifty percent 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 enrolls 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 readmission to the award course or re-enrolment in the unit or units of study concerned after at least 4 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 Readmissions).

(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 readmission to an award course or re-enrolment in a unit of study after a period of exclusion, and who is refused readmission or re-enrolment may also apply to the Appeals Committee.

(b) The Appeals Committee shall comprise:

- (i) 3 *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) 2 student Fellows; and
- (iv) up to 4 other Fellows.

(c) The Appeals Committee may meet as one or more sub-committees providing that each sub-committee shall include at least 1 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 sub-committee.

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

(f) The Appeals Committee or a sub-committee 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 sub-committee considering the appeal. A student so appearing may be accompanied by a friend or adviser.

(h) The Appeals Committee or sub-committee 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 sub-committee hears the student.

(i) If, due notice having been given, a student fails to attend a meeting of the Appeals Committee or sub-committee scheduled to consider that student's appeal, the Appeals Committee or sub-committee, 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.

2. Testamurs may indicate streams or majors or both as specified in the relevant faculty resolutions.

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.

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 web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

See also the Glossary for administrative information relating to particular terms.

Accommodation Service

The Accommodation Service helps students find off-campus accommodation. The service maintains an extensive database of accommodation close to the Camperdown and Darlingtown Campus or within easy access via public transport. Currently enrolled students can access the database online through the MyUni student portal, or the accommodation website (<http://www.usyd.edu.au/accomm>).

Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia

Phone: (02) 9351 3312
Fax: (02) 9351 8262
Email: accomm@stuserv.usyd.edu.au
Web: www.usyd.edu.au/accomm (<http://www.usyd.edu.au/accomm>)

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 (02) 9351 4118 for more information. For enquiries regarding special admissions (including mature-age entry) phone (02) 9351 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: (02) 9351 4117 or (02) 9351 4118
Fax: (02) 9351 4869
Email: admissions@records.usyd.edu.au
Web: www.usyd.edu.au/su/studentcentre (<http://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 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 the student centre website (<http://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 (<http://www.usyd.edu.au/io>).

Assessment

For assessment matters refer to the relevant department or school.

Careers Centre

The Careers Centre provides careers information and advice, and help in finding course-related employment both while you're studying and when you commence your career.

Careers Centre
Ground Floor, Mackie Building, K01

Fax: (02) 9351 4869
Email: admissions@records.usyd.edu.au
Web: www.usyd.edu.au/su/studentcentre (<http://www.usyd.edu.au/su/studentcentre>)

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 (http://www.usyd.edu.au/cas_emp).

Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia

Phone: (02) 9351 8714
Fax: (02) 9351 8717
Email: ces@stuserv.usyd.edu.au
Web: www.usyd.edu.au/cas_emp (http://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. Subject areas include: history and culture, creative arts, social sciences, languages, IT, business and overseas study tours. Courses are open to everyone.

The centre relocated at the end of 2004. Please refer to the centre's website for up-to-date contact details, or phone the existing general enquiry number (02) 9351 4789 for redirection.

Sydney University Village, L03

The University of Sydney
NSW 2006 Australia

Ph: (02) 9351 4789
Fax: (02) 9351 4793
Email: info@cce.usyd.edu.au
Web: www.cce.usyd.edu.au

Centre for English Teaching

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: (02) 9351 0760
Fax: (02) 9351 0710
Email: info@cet.usyd.edu.au
Web: www.usyd.edu.au/cet (<http://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 (<http://www.usyd.edu.au/childcare>).

Child Care Information Officer
Level 7, Education Building, A35

Phone: (02) 9351 5667
Fax: (02) 9351 7055
Email: childc@stuserv.usyd.edu.au
Web: www.usyd.edu.au/childcare (<http://www.usyd.edu.au/childcare>)

The Co-op Bookshop

The Co-op Bookshop is a one-stop bookshop for:

- textbooks;
- general books;
- course notes;
- reference books; and
- software at academic prices.

Lifetime membership costs \$25.00 and gives a 10 per cent discount on purchases (conditions apply).

Sports and Aquatic Centre Building, G09

Phone: (02) 9351 3705
Fax: (02) 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 website (<http://www.usyd.edu.au/counsel>).

Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia

Phone: (02) 9351 2228
Fax: (02) 9351 7055
Email: counsell@mail.usyd.edu.au
Web: www.usyd.edu.au/counsel (<http://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.

Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia

Phone: (02) 9351 7040
Fax: (02) 9351 3320
TTY: (02) 9351 3412
Email: disserv@stuserv.usyd.edu.au
Web: www.usyd.edu.au/disability (<http://www.usyd.edu.au/disability>)

Enrolment and pre-enrolment

Students entering first year

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. 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 93512063 janet.broaday@usyd.edu.au or go to www.usyd.edu.au/fmo (<http://www.usyd.edu.au/fmo>) and click on 'Sustainable Campus'.

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: (02) 9351 4005 or (02) 9351 4006
Fax: (02) 9351 7330
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

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. For details of types of assistance and online resources provided by the service see the website (http://www.usyd.edu.au/fin_assist).

Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia

Phone: (02) 9351 2416

Fax: (02) 9351 7055

Email: fao@stuserv.usyd.edu.au

Web: www.usyd.edu.au/fin_assist

(http://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 (<http://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: (02) 9351 3199, (02) 9351 4009

Protocol: (02) 9351 4612

Fax: (02) 9351 5072

(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) 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: (02) 9660 5222

HECS and Fees Office

Student Centre
Ground Floor, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia

Phone: (02) 9351 5659, (02) 9351 5062, (02) 9351 2086

Fax: (02) 9351 5081

Information Technology Services (ITS)

Information Technology Services oversees the University's computing infrastructure. Students can contact ITS either through the ITS Helpdesk or through the University Access Labs (<http://www.usyd.edu.au/su/is/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, Orange, Westmead and Cumberland campuses.

The labs allow students free access to computers including: office and desktop publishing software and storage; at-cost Internet access; printing facilities and the opportunity to host their own website.

Each student is supplied with an account, called a 'Unikey' (extro) account, which allows access to a number of services including:

- free email (www-mail.usyd.edu.au (<http://www.usyd.edu.au/about/publication/pub/calendar.shtml>));
- access to the Internet from home or residential colleges (www.helpdesk.usyd.edu.au/services.html);
- online course material (www.groucho.ucc.usyd.edu.au:9000/webct/public/home.pl);
- student facilities via the MyUni student portal (<http://myuni.usyd.edu.au>), including exam results, enrolment and variations and timetabling; and
- free courses in basic computing (such as MS Office; basic html and photoshop) that are run by Access Lab staff in the week following orientation week. To register contact the Access Lab Supervisor on 02 9351 6870.

ITS Helpdesk
University Computer Centre, H08
The University of Sydney
NSW 2006 Australia

Phone: (02) 9351 6000
 Fax: (02) 9351 6004
 Email: [[support@isu.usyd.edu.au|support@isu.usyd.edu.au
 Web: www.helpdesk.usyd.edu.au

International Student Centre

The International Student Centre consists of the International Office (IO), the International Student Services Unit (ISSU) and the Study Abroad and Exchange Office. The IO provides assistance with application, admission and enrolment procedures and administers scholarships for international students. The ISSU provides a wide range of international student support services including orientation and assistance with finding accommodation for new arrivals and psychological counselling and welfare advice for international students and their families. The Study Abroad and Exchange unit assists both domestic and international students who wish to enrol for study abroad or exchange programs.

International Student Centre

Services Building, G12
 The University of Sydney
 NSW 2006 Australia

Phone: (02) 9351 4079
 Fax: (02) 9351 4013
 Email: info@io.usyd.edu.au
 Web: www.usyd.edu.au/io (<http://www.usyd.edu.au/io>)

International Student Services Unit

Phone: (02) 9351 4749
 Fax: (02) 9351 6818
 Email: info@issu.usyd.edu.au
 Web: www.usyd.edu.au/issu (<http://www.usyd.edu.au/issu>)

Study Abroad and Exchange Unit

Study Abroad
 Phone: (02) 9351 3699
 Fax: (02) 9351 2795
 Email: studyabroad@io.usyd.edu.au
 Web: www.usyd.edu.au/io/studyabroad
 (<http://www.usyd.edu.au/io/studyabroad>)

Exchange
 Phone: (02) 9351 3699
 Fax: (02) 9351 2795
 Email: exchange@io.usyd.edu.au
 Web: www.usyd.edu.au/io/exchange
 (<http://www.usyd.edu.au/io/exchange>)

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 centre provides tutorial assistance, access to computers, an Indigenous research library, study rooms, an orientation program at the beginning of the year and assistance in study and learning skills. In particular the Koori Centre aims to increase the successful participation of Aboriginal and Torres Strait Islander people 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.

Close collaboration is also maintained 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: (02) 9351 2046 (general enquiries)
 Toll Free: 1800 622 742
 Community Liaison Officer: (02) 9351 7003
 Fax: (02) 9351 6923
 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: (02) 9351 9393
 Toll Free: 1800 000 418
 Fax: (02) 9351 9400
 Email: yginfo@fhs.usyd.edu.au
 Web: www.yg.fhs.usyd.edu.au

Language Centre

The Language Centre provides multimedia teaching rooms for Faculty of Arts courses. Technical support for teaching staff is available on site. Student self-access facilities for curriculum materials, access to multilingual satellite television broadcasts and a broadcast copying service are also provided by the centre. The centre maintains a resource collection of multimedia language materials in over 140 languages and has three language laboratories, four audiovisual classrooms, two access computer labs and one student audiovisual study room.

Level 2, Christopher Brennan Building, A18
 The University of Sydney
 NSW 2006 Australia

Phone: (02) 9351 2371
 Fax: (02) 9351 3626
 Email: language.enquiries@language.usyd.edu.au
 Web: www.arts.usyd.edu.au/Arts/departs/langcent

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 (<http://www.usyd.edu.au/lc>).

Level 7, Education Building, A35
 The University of Sydney
 NSW 2006 Australia

Phone: (02) 9351 3853
 Fax: (02) 9351 4865
 Email: lc@stuserv.usyd.edu.au
 Web: www.usyd.edu.au/lc (<http://www.usyd.edu.au/lc>)

Library

The University of Sydney Library, the largest academic library in the Southern Hemisphere, is a network of 20 libraries located on nine campuses. The Library website 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 40,000 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 on the website.

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.

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.

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.

Library facilities include individual and group study spaces, computers, printers, multimedia equipment, photocopiers and adaptive technologies. Check the 'Libraries' link on the home page 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. Your comments and suggestions are always welcome. University of Sydney Library, F03 University of Sydney NSW 2006 Australia Phone: (02) 9351 2993 (general enquiries) Fax: (02) 9351 2890 (administration), (02) 9351 7278 (renewals) Email: [\[\[loanenq@library.usyd.edu.au\]\]](mailto://loanenq@library.usyd.edu.au) [loanenq@library.usyd.edu.au](mailto://loanenq@library.usyd.edu.au) (loan enquiries), [\[\[reqill@library.usyd.edu.au\]\]](mailto://reqill@library.usyd.edu.au) [reqill@library.usyd.edu.au](mailto://reqill@library.usyd.edu.au) (inter-library loans) 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 centre runs bridging courses in mathematics at the beginning of the academic year (fees apply). The centre also provides on-going 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 www.usyd.edu.au/mlc.

Level 4, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia

Phone: (02) 9351 4061
Fax: (02) 9351 5797
Email: mlc@stuserv.usyd.edu.au
Web: www.usyd.edu.au/mlc (<http://www.usyd.edu.au/mlc>)

MyUni student portal

Launched in July 2004, the MyUni student portal 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 their 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;
- notices 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 HECS weighting of at least 0.375 each semester. Anything under this amount is considered a part-time study load. Note that some

faculties have minimum study load requirements for satisfactory progress.

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 (<http://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: (02) 9351 4263, or Anne Picot: (02) 9351 7262
Email: foi@mail.usyd.edu.au

Scholarships for undergraduates

Scholarships Unit
Room 147, Ground Floor, Mackie Building, KO1
The University of Sydney
NSW 2006 Australia

Phone: (02) 9351 2717
Fax: (02) 9351 5134
Email: scholarships@careers.usyd.edu.au
Web: www.usyd.edu.au/scholarships (<http://www.usyd.edu.au/scholarships>)

Student Centre

Ground Floor, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia

Phone: (02) 9351 3023 (general enquiries)
Academic records: (02) 9351 4109
Discontinuation of enrolment: (02) 9351 3023
Handbooks: (02) 9351 5057

Prizes: (02) 9351 5060
 Fax: (02) 9351 5081, (02) 9351 5350 (academic records)
 Web: www.usyd.edu.au/su/studentcentre
 (<http://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, 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 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 4 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.

Timetabling unit

The Timetabling Unit in the Student Centre is responsible for producing students' class and tutorial timetables. Semester 1 timetables are available from the Wednesday of O Week on the Student Centre website (<http://www.usyd.edu.au/su/studentcentre>).

The Sydney Conservatorium of Music operates produces its own complete timetable for all teaching that it delivers. The timetable is available on enrolment at the Conservatorium.

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 practitioners, 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: (02) 9351 3484

Fax: (02) 9351 4110

University Health Service (Holme)

Science Rd entry, Holme Building, A09
 The University of Sydney
 NSW 2006 Australia

Phone: (02) 9351 4095
 Fax: (02) 9351 4338

Student organisations

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

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: (02) 9660 5222 (editors, Honi Soit/Legal Aid)
Second-hand Bookshop: (02) 9660 4756
Mallet Street: (02) 9351 0691
Conservatorium: (02) 9351 1291
Fax: (02) 9660 4260
Email: postmaster@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: (02) 9351 3715
Freecall: 1800 249 950
Fax: 02 9351 6400
Email: supra@mail.usyd.edu.au
Web: www.supra.usyd.edu.au

Sydney University Sport

Sydney University Sport provides services, facilities and clubs for sport, recreation and fitness.

University Sports and Aquatic Centre, G09
The University of Sydney
NSW 2006 Australia

Phone: (02) 9351 4960
Fax: (02) 9351 4962
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: (02) 9563 6109
Email: info@usu.usyd.edu.au
Web: www.usydunion.com

Abbreviations and glossary

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

For a glossary of terms, describing the terminology in use at the University of Sydney, please see the glossary section.

Abbreviations

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 Co-operation
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
CREO	Centre for Regional Education, Orange
CRICOS	Commonwealth Register of Institutions and Courses for Overseas Students
CRRI	Centre for Rural and Regional Innovation

Abbreviations and glossary

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
HELP	Higher Education Innovation Programme (DEST)
HELP	Higher Education Loan Programme
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)
IO	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 On-line 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
NSW VCC	New South Wales Vice-Chancellors' Conference
NTEU	National Tertiary Education Industry Union

O	
OECD	Organisation for Economic Co-operation 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

Abbreviations and glossary

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 University 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 Organisation

Y	
YFE	Year of First Enrolment

Abbreviations and glossary

The following information is a printed version of the information available through Handbooks Online, on the University of Sydney web site. Please visit "<http://www.usyd.edu.au/handbooks/>" for the most current handbooks information.

For a table of the more commonly used acronyms and abbreviations that appear in University documents and publications please see the abbreviations section.

Glossary

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

AAM - Annual Average Mark

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:

$$\text{AAM} = \frac{\sum (\text{marks} \times \text{creditPointValue})}{\sum (\text{creditPointValue})}$$

(sums over all UoS's 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 1 through to the completion of the processing of results at the end of Semester 2. (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 Sidneienses

A searchable database of graduates of the University from 1857 to 30 years prior to the current year.

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 is 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 eleven 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 co-operate 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.)

Co-requisite

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 co-operative 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% 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, Co-requisite, Pre-requisite.)

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).

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**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 1 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 enrolls in a course by registering with the supervising faculty in the units of study to be taken in the coming year, semester or session.

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 to-

gether 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 for HECS.

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.
PCON	Pass (concessional)	A mark of 46-49. Use of this grade is restricted to those courses that allow for a concessional pass of some kind to be awarded. A student may re-enrol in a unit of study for which the result was PCON. Each faculty will determine and state in its course regulations what proportion, if any, may count - 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 rest with their 'home' institution.

International - Sponsored

A private International Student who are fully sponsored for their tuition; their 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. They 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 co-operation

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 1. During O Week, students can join various

clubs, societies and organisations, register for courses with departments and take part in activities provided by the University of Sydney Union.

P

Part-time student

See Attendance Mode, Attendance Pattern, Equivalent Full-Time 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. Pre-requisites can be mandatory (compulsory) or advisory. (See also Assumed knowledge, Co-requisite, 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) pre-requisite unit of study which must have a grade of Pass or better. (See also Assumed knowledge, Co-requisite, Pre-requisite, 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 Masters 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 1 or 2 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 session.)

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 9-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 passport-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 6 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 pre-requisite or co-requisite 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:

$$(\text{mark} * \text{credit\_pt\_value} * \text{level weight}) / (\text{credit\_pt\_value} * \text{level weight})$$

(sums over all UoS completed in the selected period)

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 of WAMs.

Y

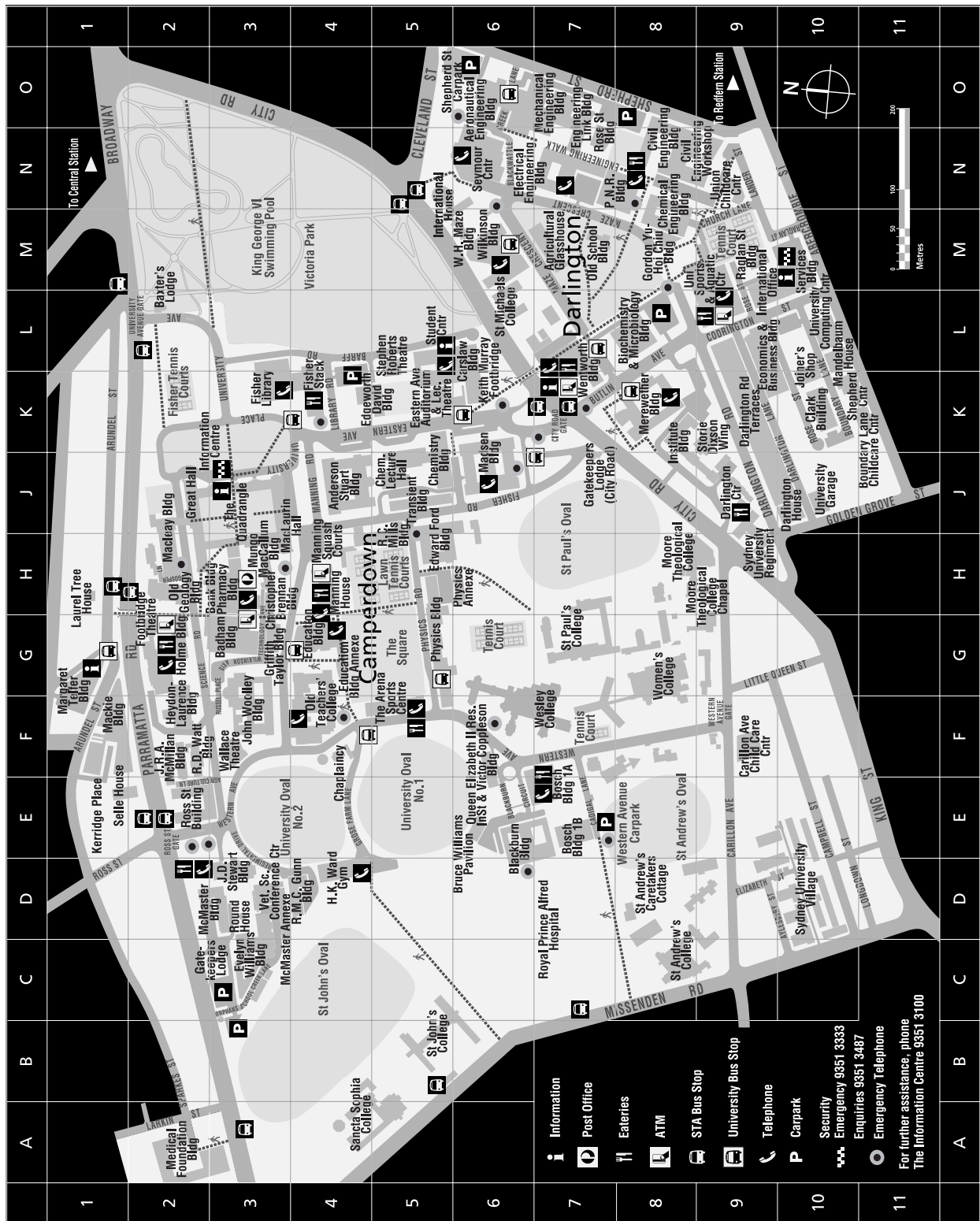
Year of First Enrolment (YFE)

The year in which a student first enrolls 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.

Camperdown / Darlington campus map



University Buildings

- O6 Aeronautical Engineering Building
J4 Anderson Stuart Building
G3 Badham Building
H3 Bank Building
L2 Baxter's Lodge
L6 Biochemistry and Microbiology Building
E8 Blackburn Building
E7 Bosch Building 1A
E7 Bosch Building 1B
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 Heydon-Laurence Building
G2 Holme Building
K8 Institute Building
N5 International House
F2 J.R.A. McMillan Building
D3 J.D. Stewart Building
F3 John Woolley Building
F1 Mackie Building
H3 MacLaurin Hall
H2 Macleay Building
G1 Margaret Telfer Building
J6 Madsen Building
H4 Manning House
H4 Manning Squash Courts
D3 McMaster Annexe

- A4 Sancta Sophia College
C8 St Andrew's College
B5 St John's College
L6 St Michael's College
G7 St Paul's College
E1 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
Facilities (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 Schaeffer 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 No1
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
F1 Careers Centre
G1 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 Services
L9 International Office
G1 Personnel
M10 Printing Services (UPS)
H2 Publications Office
H3 Research Office
M10 Room Bookings and Venue Management
F1 Scholarships Unit
L5 Student Centre
G1 Student Housing
G4 Student Services Unit
K8 Summer School
C3 Veterinary Hospital and Clinic
H2 Vice-Chancellor

