The University of Sydney

Faculty of Science Handbook 2000

The University of Sydney

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The University's homepage tells you all about courses at Sydney, some careers they can lead to, and what university life is like. The interactive website, with video and sound clips, has links to the University's faculties and departments.

You can explore the University of Sydney on the web at http://www.usyd.edu.au/.

University semester and vacation dates 2000

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

	Day	Date (2000)
First Semester lectures begin	Monday	28 February
Easter recess		
Last day of lectures	Thursday	20 April
Lectures resume	Monday	1 May
Study vacation: 1 week beginning	Monday	5 June
Examinations commence	Monday	12 June
First Semester ends	Saturday	24 June
Second Semester lectures begin	Monday	10 July
Mid-semester recess		
Last day of lectures	Friday	8 September
Lectures resume	Monday	9 October
Study vacation: 1 week beginning	Monday	6 November
Examinations commence	Monday	13 November
Second Semester ends	Saturday	2 December

Last dates for withdrawal or discontinuation 2000

	Day	Date
Semester 1 units of study		
Last day to add a unit	Friday	10 March
Last day for withdrawal	Friday	31 March
Last day to discontinue with permission	Friday	14 April
Last day to discontinue	Friday	2 June
Semester 2 units of study		
Last day to add a unit	Friday	28 July
Last day for withdrawal	Thursday	31 August
Last day to discontinue with permission	Not applicable in 2000 *(there are 7 weeks to withdraw until 30 August)*	
Last day to discontinue	Friday	3 November
Full Year units of study		
Last day for withdrawal	Thursday	30 March
Last day to discontinue with permission	Friday	14 July
Last day to discontinue	Friday	3 November

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How to use this handbook

This is the Faculty of Science Handbook. In it you will find a store of information about things you are likely to need to know about the Faculty.

In particular, it will help you to find out who the people in your Faculty are; the requirements for degrees in the Faculty and the ways that these can be satisfied; what units of study are offered and the books required to do these; where to turn for more information, advice and help.

When making up your mind about your undergraduate course of study, look at Chapter 3, dealing with how to get a degree, and also read the Resolutions of the Senate that apply to the degree (Chapter 7). If you would like help in deciding on the best unit of study for you to take, talk to a Faculty or Departmental adviser.

Once you have selected the Departments you will be studying in, you will then enrol. The Faculty requires all enrolments to be approved by Faculty Advisers before the completion of the enrolment process. Any further particular requirements of Departments you study in are given at the beginning of the Department's entry in Chapter 3 on units of study.

Information and advice

Faculty Office
The offices of the Dean and the Faculty Manager are in the Carslaw Building. The Dean is located on level 4 in Room 428 and the Faculty Manager is in the Faculty Office, level 2.
Departmental advisers or Head of Department or section
Any special advisers for Departments are set out in Chapter 2. For questions about particular units of study or subjects consult the relevant Department.

Beginning studies in the Faculty of Science - frequently asked questions

How do I qualify for the pass degree of Bachelor of Science?
You complete 144 credit points, normally over three years, including a major study in at least one Science Discipline Area.
Should I read the Resolutions ?
Definitely. The Resolutions, which control undergraduate and postgraduate degrees, are collected in Chapters 8 and 9 respectively. The information in those Chapters has precedence over all other information in this handbook.
How do I qualify for the Bachelor of Science with Honours?
You complete the requirements for the pass degree, followed by a fourth year of advanced study in a single Science Discipline Area.
What is meant by 'credit points'?
Credit points are allotted to each unit of study. A unit of study is a semester-length course in a particular subject + area requiring between four and twelve hours per week of class attendance. The number of credit points allotted to a unit of study is 3 (Junior Mathematics only) 4, 6, 8 or 12.
Is a 'unit of study' the same as a 'course' ? In Handbooks from previous years the word 'unit' seems to have meant the same as 'creditpoint".'..
The University of Sydney has adopted the terminology recommended by the Commonwealth Department of, Education, Training and Youth Affairs (DETYA). You may find that the academic staff sometimes use the old terms.

What is the difference between 'Junior', 'Intermediate' and 'Senior' units of study?
Junior units of study are normally taken in your first year; Intermediate units of study have the completion of Junior units of study as entry requirements. Senior units of study have Intermediate units of study as entry requirements.
How many Junior credit points must I complete?
You must complete at least 36 Junior credit points (if you are a Combined Law student, you enrol in *Legal Institutions* and *Law, Lawyers and Justice in Australian Society* and 36 Junior credit points).
Are there compulsory elements in the BSc degree?
You must complete at least 12 credit points in Mathematics and Statistics. These are generally taken at the Junior level.
What are the Tables of Units of Study?
The Tables, published in the Faculty Handbook, list all the units of study which can be counted to a particular degree, including their enrolment code, official tide, credit point value and entry requirements. The Tables for Undergraduate units of study are set out in Chapter 3 of this handbook.
How can I get advice about selecting units of study?
First, you should read the unit of study descriptions in the Faculty Handbook. When enrolling you will be able to talk to representatives of the Departments and Schools. The Faculty Office staff can help you plan the structure of your degree at any time.
Can I count units of study not listed in the Table?
In special circumstances you may apply to take units of study from other degree programs or even from other universities.
I have studied at a tertiary institution already. Can previous studies be credited?
In general previous university studies can be credited, provided that they are recent. You must complete a credit application form, which must be submitted to the Faculty Office together with original academic transcripts and descriptions of the units that you wish to have credited.
I have other commitments (family, employment) - can I take the degree part-time?
Yes, but you must indicate this when enrolling. Day-time attendance at lectures and laboratory classes is required for most science units of study. If you have very demanding commitments it may be better to transfer to distance education study.
Is there a time limit?
You must complete all the degree requirements within ten years from the date of admission to candidature (eg: if you started in 1998, you must have completed by the end of 2007). If you have credit points from previous study, the time is reduced appropriately.
Can I interrupt my studies to travel?
You can suspend for a year (usually this is for travel or in order to earn some money by full time work). If necessary, you can apply for a further year of suspension, but after this the candidature usually is considered to have lapsed.
If I do well, can I get into another degree program with a higher entry mark?
Yes, but this will be competitive. It is realistic to assume you will be completing the degree in which you first enrol.
What are my chances of success?
Excellent. You have received an offer because the University believes you are qualified to complete the degree. Problems could arise if you are unable or unwilling to give your studies some priority over other interests, commitments and worries. Even if you have these problems, there are many ways in which you can find help and support within the University (these are publicised during Orientation Week). It is worth emphasizing here that if your first language is not English, or if you have specific learning problems, you should consult the Learning Assistance Centre.

Message from the Dean

On behalf of the Faculty of Science, I extend a warm welcome to all students enrolling in Science in 2000, particularly those commencing their studies this year. We hope that your stay at the University will be both enjoyable and productive.

The Faculty has now been in existence for over a hundred years and its graduates have brought us considerable distinction during that time. Many of them have occupied high profile public positions in diverse areas both here and abroad. For example, our current alumni include an astronaut, the Chief Scientist for the British Government and the head of one of Australia's largest companies, and last year Bryan Gaensler was chosen Young Australian of the Year.

Because of its size and extensive links with other Faculties in the University, the Faculty of Science is able to offer courses which cater for a very wide range of student interests and abilities. Our courses provide preparation for professional careers in many scientific fields, including medical science, psychology, environmental science, computer science and molecular biology. The degree programs also offer combinations of subjects which can provide a broad general education in science. This education will open the way for a variety of careers in both the public and private sectors, as well as prepare you for further study in science.

The courses offer units of study which cater for all levels of interest and ability. Most units are available at an advanced level for students seeking a special challenge in their studies. In addition, our Talented Student Program provides enormous flexibility in study for students with exceptional ability. Semesterised units of study also increase flexibility allowing you a wide choice of subject options to suit your circumstances. The Faculties of Arts and Science offer a joint Bachelor of Liberal Studies allowing specialisations in both Arts and Science.

In this Handbook, you will find information about all of the courses and units of study and the Departments which provide them, as well as information about the Faculty. You will also find the rules which govern your progress through your degree. If you want more detailed information, you should contact the relevant Department for unit of study and course information or the Faculty Office for both course and general administrative information. Staff are available to discuss matters with you either in person or on the telephone. Please seek us out if you need help.

Finally, we want to encourage you to enjoy all facets of university life, not just study. The Faculty has many student societies, and there are many other events and activities for students on campus. We want your University experience to be hard work and good fun, with a high quality degree at the end of it.

May I wish you every success in your studies.

Beryl Hesketh, Dean

CHAPTER 1
Faculty of Science

Information in this section is accurate as at 21 June 1999.

The Faculty of Science

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Fax:+61 (02) 9351 4846
Email: facsci@scifac.usyd.edu.au
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The University of Sydney
NSW 2006

Departments and schools

Department of Agricultural Chemistry and Soil Science, A03

Phone: +61 (02) 9351 2439
Fax: +61 (02) 9351 5108
Email: p.clifford@acss.usyd.edu.au
http://www.usyd.edu.au/su/agric/
Head of Department: Associate Professor Les. Copeland

Department of Anatomy and Histology, F13

Phone: +61 (02) 9351 2497
Fax: +61 (02) 9351 6556/2813
Email: enquiries@anatomy.usyd.edu.au
http ://www. anatomy.usyd.edu. au
Head of Department: Associate Professor Cedric D. Shorey

Department of Biochemistry, G08

Phone: +61 (02) 9351 2597
Fax: +61 (02) 9351 4726
Email: m.miller@biochem.usyd.edu.au
http://www.biochem.usyd.edu.au/
Head of Department: Professor Richard I. Christopherson

School of Biological Sciences, A12

Phone: +61 (02) 9351 2848
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Email: djp@bio.usyd.edu.au
http://www.bio.usyd.edu.au/SOBS/
Head of School: Professor David J. Patterson

School of Chemistry, F11

Phone: +61 (02) 9351 4504
Fax: +61 (02) 9351 3329
Email: enquiries@chem.usyd.edu.au
URL:http://www.chem.usyd.edu.au/
Head of School: Professor Leslie D. Field

Basser Department of Computer Science, F09

Phone: +61 (02) 9351 3423
Fax: +61 (02) 9351 3838
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URL:http://www.cs.usyd.edu.au/
Head of Department: Associate Professor Robert J. Kummerfeld

School of Geosciences, F05

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Fax:+61 (02) 9351 0184
Email: admin@geosciences.su.oz.au
http://www.usyd.edu.au/geosciences/geology (Geology and Geophysics)
http://www.usyd.edu.au/su/geography/(Geography)
Head of School: Professor Eric Waddell

School of Mathematics and Statistics, F07

Phone: +61 (02) 9351 4533
Fax: +61 (02) 9351 4534
Email: enq@maths.usyd.edu.au
http://www.maths.usyd.edu.au:8000/
Head of School: Professor E. Norman Dancer

Department of Microbiology, G08

Phone: +61 (02) 9351 2536
Fax: +61 (02) 9351 4571
Email: hod.micro@microbio.usyd.edu.au
http://www.microbio.usyd.edu.au/
Head of Department: Professor Peter R. Reeves

Department of Pathology, D06

Phone: +61 (02) 9351 2414/2600
Fax: +61 (02) 9351 3429
Email: fi@pathology.usyd.edu.au
http://www.med.su.oz.au/path/
Head of Department: Professor Nicholas H. Hunt

Department of Pharmacology, D06

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Fax:+61 (02) 9351 3868
Email: virginia@pharmacol.usyd.edu.au
http://www.usyd.edu.au/su/pharmacology/
Head of Department: Professor J. Paul Seale

Department of Pharmacy, A15

Phone: +61 (02) 9351 2320
Fax: +61 (02) 9351 4391
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http://www.pharm.usyd.edu.au/
Head of School: Professor Shalom I. Benrimoj

School of Physics, A28

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Fax:+61 (02) 9351 7726
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http://www.physics.usyd.edu.au/
Head of School: Professor Richard E. Collins

Department of Physiology, F13

Phone:+61 (02) 9351 2509
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http://www.physiol.usyd.edu.au/
Head of Department: Associate Professor David Davey

Department of Psychology, A19

Phone: +61 (02) 9351 2865
Fax: +61 (02) 9351 2603
Email: hod@psych.su.oz.au
http://www.psych.su.oz.au/
Head of Department: Professor Ian Curthoys

Units and centres

Australian Key Centre for Microscopy and Microanalysis, F09
Phone: +61 (02) 9351 2351
Fax: +61 (02) 9351 7682
Email: kc@emu.usyd.edu.au
http://www.kcmm.usyd.edu.au/
Director: Professor David J. H. Cockayne

Centre for Research on Ecological Impacts of Coastal Cities, A11
Phone: +61 (02) 9351 2590/4835
Fax: +61 (02) 9351 6713
Email: aju@bio.usyd.edu.au
http://www.bio.usyd.edu.au/SOBS/SRC_EICC/src.html/
Director: Professor Antony J. Underwood

Coastal Studies Unit, F09
Phone: +61 (02) 9351 3625
Fax:+61 (02) 9351 3644
Email:A.Short@csu.usyd.edu.au
http://www.usyd.edu.au/su/geography/
Director: Associate Professor Andrew D. Short

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http://www.bio.usyd.edu.au/SOBS/research/centres/
FRUITFLY/fruitfly.html
Director: Dr A W Meats

History and Philosophy of Science, F07
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Director: Associate Professor Andrew Short

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http://www.usyd.edu.au/su/mlc/
Director: Ms Jacqueline M. Nicholas

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Director: Professor Peter J. Davies

CHAPTER 2

Study in the Faculty of Science

This handbook is intended to give you a comprehensive view of the courses and units of study that the Faculty of Science offers, and to help you select those best suited to your capacity, present needs and intended career.

The Faculty of Science offers a wide range of training intended, on the one hand, to prepare you to become a professional scientist in one or other of the several branches of science (including Pharmacy) and, on the other, to prepare you for careers in non-specialised fields requiring a scientific background.

Units of study available

The Faculty offers units of study in the following subjects:
   Agricultural Chemistry
   Anatomy
   Biochemistry
   Biology
   Cell Pathology
   Chemical Engineering Science
   Chemistry
   Civil Engineering Science
   Computer Science
   Geography
   Geology
   Geophysics
   Histology
   History and Philosophy of Science
   Immunology
   Information Systems
   Marine Sciences
   Applied Mathematics
   Pure Mathematics
   Mathematical Statistics
   Mechanical Engineering Science
   Nutrition Science
   Microbiology
   Pharmacology
   Physics
   Physiology
   Psychology
   Soil Science

In addition to the above, units of study are available for the degrees of Bachelor of Liberal Studies, Bachelor of Medical Science, Bachelor of Pharmacy, Bachelor of Psychology, Bachelor of Computer Science and Technology and the specially designated BSc(Advanced), BSc(Advanced Mathematics), BSc(Bioinformatics), BSc(Environmental), BSc(Marine Science), BSc(Molecular Biology and Genetics) and BSc(Nutrition) degree programs. Combined degree programs are also available with the Faculties of Arts, Economics, Engineering and Law.

Information about these units of study is given in Chapters 3 and 5. The Faculty also offers a Talented Student Program, which is discussed in Chapter 4. The Resolutions pertaining to undergraduate award courses are collected in Chapter 8. Postgraduate study is discussed in Chapters 6 and 9.

Science disciplines and subject areas available in the Faculty of Science

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
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, Microbiology
Beach Dynamics *see* Marine Studies, Geography
Biodegradation *see* Microbiology, Agricultural Chemistry and Soil Science
Biological Chemistry *see* Agricultural Chemistry and Soil Science, Biochemistry, Chemistry
Bioinformatics *see* Biological Science, Computer Science, Microbiology, BSc (Bioinformatics)
Bioremediation *see* Biological Sciences, Microbiology, Agricultural Chemistry and Soil Science
Biotechnology *see* Biochemistry, Biological Sciences, Chemistry, Microbiology, Physiology
Behavioural Genetics *see* Biological Sciences
Behavioural Science *see* Psychology
Biomathematics *see* Mathematics and Statistics
Biophysical Chemistry *see* Biochemistry, Chemistry
Botany *see* Biological Sciences
Carbohydrate Chemistry *see* Agricultural Chemistry and Soil Science, Biochemistry, Chemistry
Catalysis *see* Biochemistry, Chemistry
Category Theory *see* Mathematics and Statistics
Cancer *see* Biochemistry, BMedSc, Cell Pathology, Immunology, Physiology
Cardiovascular disease *see* Cell Pathology
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
Communicating Science *see* History and Philosophy of Science
Communications Technology *see* Computer Science
Computational Biology *see* Bioinformatics
Computer-aided Drug Design *see* Biochemistry, BMedSc, Chemistry, Pharmacology
Computational Algebra *see* Mathematics and Statistics
Computational Chemistry *see* Chemistry
Computational Physics *see* Physics
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, Geography, Geology and Geophysics
Cosmology *see* Physics, 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, Histology
Dietetics *see* Biochemistry, BMedSc, BSc(Nutrition), Postgraduate study: MNutrSc and MNutrDiet

Disease *see* Biochemistry, BMedSc, Cell Pathology, Immunology, Microbiology

Drugs *see* Biochemistry, BMedSc, Chemistry, Pharmacology, Pharmacy

DNA Technology *see* Biochemistry, Biological Sciences, BMedSc, 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* Histology, GradDipSc (Microscopy and Microanalysis), MSc (Microscopy and Microanalysis), Physics

Embryology *see* 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), Chemistry, Geography, Marine Sciences, Microbiology

Environmental Science *see* Agricultural Chemistry and Soil Science, Biological Sciences, BSc (Environmental), GradDipSc (Environmental), MSc (Environmental), Chemistry, Geography, Geology and Geophysics, Microbiology, Physics

Enzymes *see* Agricultural Chemistry and Soil Science, Biochemistry

Epidemiology *see* Mathematics and Statistics, Microbiology

Evolution *see* Biological Sciences, Geology and Geophysics

Expert Systems *see* Computer Science

Fish Biology *see* Biological Sciences

Fisheries Biology *see* Marine Sciences

Fluvial Systems *see* Geography

Food Science *see* Agricultural Chemistry and Soil Science, Biochemistry, Chemistry, Microbiology, BSc(Nutrition), Postgraduate study: MNutrSc and MNutrDiet

Forensic Science *see* Biochemistry, 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), Cell Pathology, Microbiology

Genetic Engineering *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biology and Genetics), Microbiology

Geochemistry *see* Chemistry, Geography, Geology and Geophysics

Geographical Information Systems (GIS) *see* Agricultural Chemistry and Soil Science, Geography

Geomagnetism *see* Mathematics and Statistics

Geometry *see* Mathematics and Statistics

Geomorphology *see* Geography

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

History of Science *see* BMedSc, History and Philosophy of Science

Human Life Sciences *see* Anatomy, Biochemistry, Biological Sciences, BMedSc, 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, Cell Pathology

Industrial Chemistry *see* Chemistry

Infectious Diseases *see* BMedSc, 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

Intertidal Ecology *see* Biological Sciences, Marine Sciences

Invertebrate Zoology *see* Biological Sciences

Land Resources *see* Agricultural Chemistry and Soil Science, Geography

Lasers *see* Physics

Macromolecular Structure *see* Biochemistry

Magnetic Resonance *see* Chemistry

Imaging *see* Biochemistry, BMedSc

Mammalian Biology *see* Biological Sciences

Marine Biology *see* Biological Sciences, Marine Studies

Marine Ecology *see* Biological Sciences, Marine Sciences

Marine Geology *see* Geology and Geophysics

Marine Geophysics *see* Geology and Geophysics

Marine Science *see* Biological Sciences, Chemistry, Geography, Geology and Geophysics, Marine Studies

Materials Science *see* Chemistry, Physics

Mathematical Modeling *see* Mathematics and Statistics, Physics

Mathematical Statistics *see* Mathematics and Statistics

Measurement Science *see* Physics

Medicinal Chemistry *see* Chemistry, BMedSc, Pharmacology, Pharmacy

Medical Biochemistry *see* Biochemistry, BMedSc, BSc (Molecular Biology and Genetics)

Medical Microbiology *see* BMedSc, Microbiology

Medical Molecular Biology *see* Biochemistry, Microbiology, BMedSc, BSc (Molecular Biology and Genetics

Membrane Biology *see* Biological Sciences

Metabolism *see* Agricultural Chemistry and Soil Science, Biochemistry, Biological Sciences, BMedSc, Microbiology

Microanalysis *see* Chemistry, Physics, GradCertSc (Microscopy and Microanalysis), GradDipSc (Microscopy and Microanalysis), MSc (Microscopy and Microanalysis)

Microscopy *see* Agricultural Chemistry and Soil Science, Biological Sciences, BMedSc, Histology, Microbiology, Physics, GradCertSc (Microscopy and Microanalysis), GradDipSc (Microscopy and Microanalysis), MSc (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), Cell Pathology, Chemistry, Microbiology, Physiology

Molecular Engineering *see* Chemistry

Molecular Genetics *see* Biochemistry, Biological Sciences, BMedSc, BSc (Molecular Biology and Genetics)

Molecular Modeling *see* Chemistry, 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

Neurochemistry *see* Pharmacology

Neuropathology *see* Cell Pathology

Neurophysiology *see* BMedSc, Physiology, Anatomy

Neuroscience *see* Anatomy, BMedSc, Physiology, Psychology

Nitrogen Fixation *see* Agricultural Chemistry and Soil Science, Biological Sciences, Chemistry, Microbiology
Nonlinear Analysis *see* Mathematics and Statistics
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 Studies
Optics *see* Physics
Organic Chemistry *see* Chemistry
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
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* Chemistry, Pharmacy
Philosophy of Science *see* History and Philosophy of Science
Photonics *see* Physics
Phycology *see* Biological Sciences
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
Programming *see* Computer Science
Proteins *see* Biochemistry, Chemistry
Protozoology *see* Biological Sciences
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), Microbiology, Physiology
Resource Management *see* Biological Sciences, Geography
Respiratory disease *see* Cell Pathology
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
Software Engineering *see* Computer Science
Soil Chemistry *see* Agricultural Chemistry and Soil Science
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
Spectroscopy *see* Chemistry, Physics
Statistics *see* Mathematics and Statistics
Structural Geology *see* Geology and Geophysics
Surface Science *see* Chemistry, Physics
Systems Analysis *see* Computer Science
Therapeutics *see* BMedSc, Pharmacology
Theoretical Chemistry *see* Chemistry

Theoretical Physics *see* Physics
Thermal Physics *see* Physics
Toxicology *see* Chemistry, Pharmacology, Pharmacy
Vertebrate Zoology *see* Biological Sciences
Virology *see* BMedSc, BSc (Molecular Biology and Genetics), Microbiology
Volcanology *see* Geology and Geophysics
X-Ray Crystallography *see* Chemistry
Zoology *see* Biological Sciences

Departmental and Faculty advisers

The selection of units of study is particularly important in the Faculty of Science because of the interdependence of the subjects studied. You should therefore consult one of the advisers before the beginning of Semester 1 (see list below).

All first year students will have the opportunity to discuss particular units of study and any general academic problems with one of the Departmental advisers concerned. There will also be advisers available during the enrolment period.

You may seek advice from the advisers, the Associate Deans, Pro-Deans or Dean of the Faculty at any time in the academic year, should the need arise. Advisers should not, however, be regarded as coaches dealing with detailed instruction.

Degree program coordinators

BSc(Advanced Maths) Associate Professor Don Taylor (Departmental contact)
BSc(Bioinformatics) Dr Michael Wise (Departmental contact)
BSc(Environmental) Dr Gavin Birch
BSc(Molecular Biology and Genetics) Professor Peter Lay
BMedSc (pre-2000 Resolutions) Dr Ian Spence
BMedSc (new year 2000 Resolutions) Dr Gareth Denyer
BCST Dr Alan Fekete
BSc(Nutrition) Associate Professor Jennie Brand Miller

Departmental advisers

Agricultural Chemistry
Associate Professor Les Copeland, Dr Edith M. Lees

Anatomy
Dr John Mitrofanis, Dr Jan Provis

Biochemistry
Intermediate year: Dr Gareth S. Denyer
Senior year: Dr Simon B. Easterbrook-Smith
4th year: Dr Merlin Crossley

Biological Sciences
Junior year: Dr Mary Peat
Intermediate year: Dr Jan Marc, Dr Kathy Raphael, Dr Michael Thompson
Senior year: Associate Professor Bill Allaway, Dr Murray Henwood, Professor Ian Hume, Dr Bruce Lyon, Dr Alan Meats, Dr Ben Oldroyd
4th year: Dr Chris Dickman

Cell Pathology
Professor Nicholas Hunt, Associate Professor Nicholas King

Chemistry
Junior year: Dr Julia James
Intermediate year: Associate Professor Greg Warr
Senior year: Associate Professor Trevor Hambley
4th year: Associate Professor Margaret Harding

Computer Science
Undergraduate (Junior, Intermediate & Senior years): Dr Jeff Kingston
4th year: Dr Michael Hitchins
Master of Information Technology: Dr Alan Fekete
Course Committee & International Students: Professor Jon Patrick
Research Committee (Research Students): Dr Antonis Symvonis

Geography
Junior year: Dr Bill Pritchard

Intermediate year: Dr Peter Cowell
Senior year: Dr David Chapman
4th year: Associate Professor Andrew Short
Geology and Geophysics
Junior year: Dr Jock B. Keene
Intermediate year: Dr Gavin Birch
Intermediate year Environmental Geology: Dr Gavin Birch
Senior year: Dr Roger Buick
4th year: Dr Geoffrey L. Clarke
Geophysics: Professor Iain Mason
Histology
Associate Professor Christopher R. Murphy, Dr Maria Byrne
History and Philosophy of Science
Dr Paul E Griffiths
Immunology
Dr Helen Briscoe
Marine Sciences
Associate Professor Andrew D. Short
Mathematics and Statistics
Junior year: First-year Office
Intermediate year: Dr C Macaskill (Applied Mathematics),
    Mrs Mary Phipps (Mathematical Statistics), Ms Sandra
    Britton and Dr Adrian Nelson (Pure Mathematics)
Senior year: Dr David Galloway (Applied Mathematics),
    Associate Professor Neville Weber (Mathematical Statistics)
    and Ms Jenny Henderson (Pure Mathematics)
4th year: Dr Hugh Luckock (Apphed Mathematics), Professor
    John Robinson (Mathematical Statistics) and Dr Karl
    Wehrhahn (Pure Mathematics)
Microbiology
Intermediate year: Mrs Ilze Dalins
Senior year: Dr Trevor Duxbury
4th year: Dr Tom Ferenci
BMedSc: Dr Ian Humphrey-Smith
BSc (Molecular Biology and Genetics): Dr Dee Carter
Pharmacology
Intermediate Year: Dr Robin Allan
Senior Year: Dr Ian Spence, Professor Graham Johnston
4th Year: Associate Professor Rosemarie Einstein
Pharmacy
Miss Erica Sainsbury, Dr Kylie Williams
Physics
Junior year: Mrs Rosemary M. Millar
Intermediate year: Dr Juris Ulrichs
Senior year: Dr Neil Cramer
4th year: Dr Peter Robinson
Physiology
Intermediate year: Dr Miriam Frommer
Senior year: Dr Joseph Hoh, Dr Paul Martin
4th year: Associate Professor Dave Davey
BMedSc: Mrs Francoise Janod-Groves
Psychology
Junior year: Mr James Dalziel
Intermediate year: Dr Joel Michell
Senior year: Dr Joel Michell
Honours year: Dr Pauline Howie
Soil Science
Intermediate year: Dr Stephen Cattle
Senior and Honours year: Professor Alexander B. McBratney

Recommended combinations of units of study in first year of attendance

Units of study to be taken during the first year of attendance
must be selected with subsequent years of candidature in
mind. The list below shows you how to find a first year
combination that will lead to a desired field of specialisation.

Most students should have no reason to depart from these
recommendations and no special consideration can be given to
students in later years whose difficulties arise from such
departures.

Students who are uncertain as to the field(s) of ultimate
specialization are strongly advised to take Junior units of study
in at least the three Science Discipline Areas: Mathematics,
Physics and Chemistry, thus leaving the widest possible scope
for progression in later years.

Students should note that certain Intermediate biomedical
units of study are offered only as part of the BMedSc degree.

Schools or departments, and recommended Junior level combinations

Refer to Table I for specific qualifying and/or pre- and/or
co-requisite units of study.

Agricultural Chemistry[1]
12 credit points of Junior units of study in each of Chemistry +
Mathematics + 24 credit points from one of Physics, Biology
1001 or 1901 + Biology 1002 or 1902, Geology or Geography.

Biochemistry[1]
12 credit points of Junior units of study in each of Chemistry +
Physics + Mathematics + Biology 1001 or 1901 + Biology
1002 or 1902.

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

Cell Pathology[2]
12 credit points of Junior units of study in each of Chemistry +
Physics + Mathematics + Biology 1001 or 1901 + Biology
1002 or 1003 or 1902 or 1903.

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

Chemistry
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.

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

Computer Science
COMP 1001 + COMP 1002 + MATH 1001 + MATH 1002 +
MATH 1004 + (MATH 1003 or MATH 1005) + 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.).

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

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

Information Systems
INFO 1000 + ARIN 1000 (see Faculty of Arts Handbook) + 36
credit points from preferred subject areas.

Marine Sciences[1]
Biology 1001 or 1901 + Biology 1002 or 1902 + 12 credit
points of Junior units of study in each of Geology + Chemistry
or Physics + Mathematics.

1. Major Science Subject Area beginning at Intermediate level.
2. Major Science Subject Area beginning at Senior level.

Mathematical Statistics[1]
MATH 1001 or 1901 + MATH 1002 or 1902 + MATH 1003 or 1903 + MATH 1005 or 1905 or 1015 + 36 other Junior credit points.

Mathematics
MATH 1001 or 1901 + MATH 1002 or 1902 + MATH 1003 or 1903 + MATH 1004 or 1904 or 1005 or 1905 + 36 other Junior credit points.

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

Microbiology[1]
12 credit points of Junior Biology +12 credit points of Junior Chemistry including 1102 or 1902 or 1904 + 12 credit points of Junior Mathematics MATH 1001 or 1011 or 1901 + MATH 1005 or 1015 or 1905.

Pharmacology[1]
12 credit points of Junior units of study in each of Chemistry + Physics + Mathematics + Biology 1001 or 1901 + Biology 1002 or 1003 or 1902 or 1903.

Physics
12 credit points of Junior units of study in each of Physics + Chemistry + MATH 1001 or 1901 + MATH 1002 or 1902 + MATH 1003 or 1903 + MATH 1005 or 1905 + 12 creditpoints of other Junior units of study selected in consultation with an adviser.

Physiology[1]
6 credit points of Junior Chemistry + 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics

Psychology
12 credit points of Junior units of study in each of Psychology + Mathematics + Chemistry or Physics + Biology 1001 or 1901 + Biology 1002 or 1003 or 1902 or 1903 or Computer Science or two units of study selected in consultation with an adviser.

Soil Science[1]
12 credit points of Junior units of study in each of Chemistry + Physics or Mathematics or Computer Science

Selection of units of study in second year of attendance

During the second semester of the first year of attendance you are advised to discuss your choice of units of study for the following year with members of the academic staff in the departments in which you propose to study.

1. Major Science Subject Area beginning at Intermediate level.
2. Major Science Subject Area beginning at Senior level.

CHAPTER 3

Undergraduate degree requirements

This chapter sets out the requirements for the degrees of Bachelor of Science, Bachelor of Liberal Studies, Bachelor of Pharmacy, Bachelor of Medical Science, Bachelor of Computer Science and Technology (BCST and BCST(Adv)), Bachelor of Psychology (BPsych), the specially designated Bachelor of Science degree programs of Advanced, Advanced Mathematics, Bioinformatics, Environmental, Marine Science, Molecular Biology and Genetics and Nutritional Science, and the combined degrees of BSc/BCom, BSc/LLB, BA/BSc, BSc/BA and BSc/BE. The courses for the pass BSc (which includes the Advanced, Advanced Mathematics, Bioinformatics, Environmental, Marine Science, Molecular Biology and Genetics, and Nutrition degree programs), BMedSc and BCST degrees extend over a minimum of three years. For the Honours BSc, BMedSc and BCST degrees, a fourth year is taken and students must qualify to enter the Honours year. The courses for the BLibStud, the BPharm and both the pass and the Honours BPsych degree extend over a minimum of four years. The combined degrees of BSc/LLB, BA/BSc, BE/BSc and BSc/BE extend over five years. The information in this Chapter is in summary form and is subordinate to the provisions of the relevant degree Resolutions, collected in Chapter 7.

Restrictions (general)

(1) A candidate for a degree must satisfy the minimum eligibility requirements before commencing the degree units of study. Units of study taken before satisfying these requirements cannot normally be counted for degree purposes.

(2) A candidate may not take a unit of study in any subject without having previously completed the qualifying unit(s) of study appropriate to that subject. Except with the permission of the Head of Department, he or she must also complete the prerequisites and corequisites as prescribed.

(3) The only combinations of units of study available are those permitted by the timetable. A candidate may attend evening units of study if they are available.

Time limits

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

Suspension

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

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

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 nine 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 Pharmacy, Bachelor of Medical Science, Bachelor of Computer Science and Technology 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)*	46-49
F	Fail	Below 46 or 50
AF	Absent Fail	

*A maximum of 28 credit points or equivalent may be counted for all degrees, except BMedSc where the maximum is 16 credit points.

For Final Year Honours units of study, the following Honours grades apply from 1999. A grade of Honours is determined by a combination of WAM for years 1-3 and final year mark.

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

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

Boards of examiners

Boards of examiners formally determine undergraduate results. The University's *Calendar 1998, Vol. I, Statutes and Regulations* contains the Resolutions of the Faculty relating to the composition of the Boards, and the *Manual for Examiners* (extracts from which may be obtained at the Faculty Office) details the guidelines under which the Boards operate.

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

Regulations about discontinuation and about restrictions imposed on re-enrolment are published in the University's *Calendar 1998, Vol. I, Statutes and Regulations.* Attention is drawn in particular to Regulations 18 and 19 specifically concerned with the Faculty of Science, and to those headed 'Students in all Faculties and Boards of Studies'.

The Resolutions of the Senate that relate to students enrolled in the Faculty of Science appear below.

Discontinuation of enrolment and re-enrolment after discontinuation - undergraduate

All Faculties[1] and Boards of Studies

1. A candidate for a degree of Bachelor who ceases attendance at classes must apply to the Faculty or Board of Studies concerned and will be presumed to have discontinued enrolment from the date of application, unless evidence is produced (i) that the discontinuation occurred at an earlier date and (ii) that there was good reason why the application could not be made at the earlier time.
2. A candidate for a degree of Bachelor who at any time during the first year of attendance discontinues enrolment in all units of study shall not be entitled to re-enrol for that degree unless the Faculty or Board of Studies concerned has granted prior permission to re-enrol or the person is re-selected for admission to candidature for that degree.
3. Subject to paragraphs (i) and (ii) of section 1, no candidate for a degree of Bachelor may discontinue enrolment in a unit of study or year after the end of lectures in that unit of study or year.
4. The Dean, Pro-Dean or a Sub-Dean of a Faculty, or the Chairperson of a Board of Studies, may act on behalf of that Faculty or Board of Studies in the administration of these Resolutions unless the Faculty or Board of Studies concerned decides otherwise.

Withdrawal from full-year and First Semester units of study
5. A candidate for a degree of Bachelor who discontinues enrolment in a full-year or First Semester unit of study on or before 30 March in that year shall be recorded as having withdrawn from that course.

Withdrawal from Second Semester units of study
6. A candidate for a degree of Bachelor who discontinues enrolment in a Second Semester unit of study on or before 30 August in that year shall be recorded as having withdrawn from that course.

All Faculties[1] and Boards of Studies except the Faculty of Engineering

Discontinuation
7. (1) A discontinuation of enrolment in a unit of study shall be recorded as 'Discontinued with Permission' when the discontinuation occurs after the relevant withdrawal period and:

(a) on or before the Friday of the first week of Second Semester for a full-year unit of study; or
(b) up to the last day of the seventh week of teaching in a one-semester unit of study.
(2) A discontinuation of enrolment in a unit of study shall be recorded as 'Discontinued' when the discontinuation occurs:
(a) after the Friday of the first week of Second Semester for a full-year unit of study; or
(b) after the last day of the seventh week of teaching in a one semester unit of study.
(3) Notwithstanding paragraph (2), the Dean, Pro-Dean or Sub-Dean of the Faculty or Chairperson of the Board of Studies concerned may determine that a discontinuation of enrolment should be recorded as 'Discontinued with Permission' on the grounds of serious ill-health or misadventure.

Restriction upon re-enrolment[1]

The following are extracts from the Resolutions of the Senate concerning 'Restriction upon Re-enrolment of Certain Students who fail in Annual Examinations':
1. The Senate authorises any Faculty or Board of Studies to require a student who comes within the provisions of sections 8 to 24 below to show good cause why he or she should be allowed to re-enrol or to repeat a year of candidature or a unit of study in that Faculty or Board of Studies.
2. Subject to section 5, the Faculty or Board of Studies may exclude a student who fails to show good cause from (a) the degree course or year of candidature concerned and/or (b) the unit(s) of study concerned both in the Faculty or Board of Studies and in any other Faculty or Board of Studies in which that unit(s) of study may be taken.
3. Subject to section 5-
(a) Any student who has been excluded from a year of candidature or from a course or units of study by a Faculty or Board of Studies in accordance with section 2 and who wishes to re-enrol in that year of candidature or that unit(s) of study may apply for such re-enrolment after at least two academic years and that Faculty or Board of Studies may permit him or her to re-enrol in the year or the unit(s) of study from which he or she was previously excluded.
(b) Any student who has been excluded from a unit(s) of study by one Faculty or Board of Studies in accordance with section 2 and who wishes to enrol in that unit(s) of study in another Faculty or another Board of Studies may apply for such enrolment after at least two academic years and that other Faculty or Board of Studies may permit him or her to enrol in the unit(s) of study from which he or she was previously excluded.
4. Except with the express approval of the Faculty concerned a student excluded from a year or unit of study who is re-admitted shall not be given credit for any work completed in another Faculty or Board of Studies or another university during the period of exclusion.
5. Before exercising its powers under section 2 or 3 in relation to an individual unit of study, a Faculty or Board of Studies shall consult the Head of the Department or School responsible for the unit of study.
6. The Senate authorises the Faculty or Board of Studies as a whole or a Faculty Committee or Board of Studies Committee representing the main teaching Departments in each Faculty or Board of Studies, to carry out all duties arising out of sections 1, 2, 3, 4 and 5.
7. (1) Subject to section 7(2), a student who, having been excluded in accordance with these Resolutions, has been refused enrolment or re-enrolment in any year or unit of study by any Faculty or Board of Studies, or any Faculty Committee or Board of Studies Committee, may appeal to the Senate.
(2) A second or subsequent appeal to the Senate shall only be heard by leave of the Chancellor or the Deputy Chancellor.

1. Note that 'Faculty' includes for these purposes a 'College Board'.

A. Students in all Faculties and Boards of Studies

8. The Senate authorises any Faculty or Board of Studies to require a student to show good cause why he or she should be allowed to repeat in that Faculty or Board of Studies (a) a year of candidature in which he or she has failed or discontinued more than once or (b) any unit of study in which he or she has failed or discontinued more than once whether that unit of study was failed or discontinued when he or she was enrolled for a degree supervised by the Faculty or Board of Studies or by another Faculty or Board of Studies.

9. The Senate authorises the several Faculties or Boards of Studies to require a student who, because of failure or discontinuation has been excluded from a Faculty or course, either in the University of Sydney or in another tertiary institution, but who has subsequently been admitted or re-admitted to the University of Sydney to show good cause why he or she should be allowed to repeat either (a) the first year of attendance in which after such admission or readmission he or she fails or discontinues, or (b) any unit of study in which in the first year after admission or readmission he or she fails or discontinues.

J. Faculty of Science

18.(1) The Senate authorises the Faculty of Science to require a student to show good cause why he or she should be allowed to re-enrol in the degree of Bachelor of Science, Bachelor of Medical Science, Bachelor of Computer Science and Technology or Bachelor of Psychology if in the opinion of the Faculty he or she has not made satisfactory progress towards fulfilling the requirements for the degree.

(2) Satisfactory progress cannot be defined in all cases in advance, but a student who has not gained credit for 116 or more credit points should be asked to show good cause why he or she should be allowed to re-enrol as a candidate for the degree of Bachelor of Science, Bachelor of Medical Science, Bachelor of Computer Science and Technology or Bachelor of Psychology if in any two successive years of attendance he or she fails to gain credit for half the credit point value of units of study attempted, unless in one of these two years he or she successfully completes all units of study attempted in that year.

(3) In cases where the Faculty permits the re-enrolment of a student whose progress has been deemed unsatisfactory, the Faculty may require the completion of specified units of study in a specified time, and if the student does not comply with these conditions, the student may again be called upon to show good cause why he or she should be allowed to re-enrol in the degree of Bachelor of Science, Bachelor of Medical Science, Bachelor of Computer Science and Technology or Bachelor of Psychology.

19.(1) The Senate authorises the Faculty of Science to require a student to show good cause why he or she should be allowed to re-enrol in the degree of Bachelor of Pharmacy if in the opinion of the Faculty he or she has not made satisfactory progress towards fulfilling the requirements for the degree.

(2) Satisfactory progress cannot be defined in all cases in advance, but a student who has not gained credit for 116 or more credit points shall be asked to show good cause why he or she should be allowed to re-enrol as a candidate for the degree of Bachelor of Pharmacy, if in any two successive years of attendance he or she fails in the first of these years to gain credit for 28 credit points and then fails to gain a total of 44 credit points in the two years of attendance, unless in one of these two years he or she successfully completes all units of study attempted in that year.

(3) In cases where the Faculty permits the re-enrolment of a student whose progress has been deemed unsatisfactory, the Faculty may require the completion of specified units of study in a specified time, and if the student does not comply with these conditions the student may again be called upon to show good cause why he or she should be allowed to re-enrol in the degree of Bachelor of Pharmacy.

Degree of Bachelor of Science

Summary of requirements

The requirements for the degree are set out in the Senate Resolutions (see Chapter 7 of this Handbook), which should be read by all intending candidates (see below). In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree contained in sections 4, 5, and 8. Important aspects of the Resolutions are summarised below. The Resolutions should be consulted for any clarification of the summary points. The Resolutions in force prior to 1997 are contained in the Faculty of Science Handbook 1996, which can be inspected at the Faculty Office.

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 12 credit points from Mathematics or Statistics units of study.
- at least 12 credit points from Junior units of study in each of three Science Subject Areas (defined in Resolution 1(l)(v), in Chapter 7).
- a total of 72 credit points from Senior and Intermediate units of study in Science Subject Areas.
- at least 24 credit points from Senior units of study in a single Science Subject Area other than History and Philosophy of Science and 16 credit points from Intermediate and/or Senior units of study in a second Science Subject Area.

You should also note the following:

- you can take only units of study which do not have timetable clashes.
- most full-time students enrol in 4 (6 credit point) Junior units of study in each semester of their first year.
- you may not enrol in more than 28 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.
- you may not enrol in more than 48 credit points of Senior units of study in a single Science Subject Area.
- if you wish to major in History and Philosophy of Science, you must have another major in a single Science Subject Area.
- you may not enrol in more than 32 credit points of Intermediate units of study in a single Science Subject Area.
- you may not enrol in more than 16 credit points of Intermediate units of study and no more than 24 credit points of Senior units of study in the Science Subject Areas of Anatomy and Histology, Cell Pathology, Immunology, Pharmacology and Physiology. This means that no more than 40 credit points from units of study in these areas may be counted towards your degree.
- you may not enrol in more than 16 credit points of Intermediate units of study in Engineering Science.
- you may not enrol in more than 28 credit points of units of study not in Science Subject Areas unless you are enrolled in a specially designated degree program (e.g., BSc (Environmental)).
- 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).

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. Consultation with a Faculty adviser is always recommended.

Studying part-time

Most students study full-time (i.e., in any semester, take units of study with a total of 18 or more credit points). If you wish to study part-time you will have to indicate this when enrolling. Daytime attendance at lectures and laboratory classes is required for most science units of study.

Discontinuation

If you wish to discontinue 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. For Regulations relating to discontinuation, see the University's *Calendar 1998, Vol. I, Statutes and Regulations* and the section entitled 'Discontinuation and re-enrolment' earlier in this chapter. Students should read these Regulations carefully as a discontinuation can affect the Weighted Average Mark (WAM). For further information about the WAM, see under 'Honours units of study' below.

Universities Admissions Index (UAI)

The minimum UAI for admission to the Faculty varies from year to year. You should not be deceived about the level of difficulty of the BSc degree course.

Alternative structure of courses of study

It is possible to enrol in some units of study without completing the usual prerequisites. In all cases permission must be obtained from the Head of the Department concerned.

Senior Agricultural Chemistry units of study

If you have not taken Intermediate units of study in Agricultural Chemistry, but have completed 16 credit points of each of Intermediate Chemistry and Biochemistry, you may be permitted to enrol in Senior units of study in Agricultural Chemistry.

Biology Honours

If you have majored in Physics, Chemistry or Biochemistry and wish to study Biophysics or Plant Physiology you may be permitted to enrol in Biology Honours without having completed Intermediate or Senior units of study in Biology.

Intermediate Geography units of study

If you have completed a Junior Mathematics unit of study and 12 Junior credit points of either Chemistry or Physics, you may enrol in Intermediate Geography units of study without completing Junior units of study in Geography, with the permission of the Head of Department.

Intermediate Geology units of study

If you have completed 12 credit points of Junior units of study in each of Chemistry and Physics you may apply to the Head of Department for permission to enrol in Intermediate Geology units of study without completing Junior Geology units of study.

Special permission

You should note that the Faculty can, in certain instances, 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 the staff in the Faculty Office.

BSc Degree Resolutions

See Chapter 7.

Table 1: Bachelor of Science

(a) Unit of Study		(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered

A. Junior Units of Study

Biology

BIOL 1001	Concepts in Biology	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1901	*Februaiy*
BIOL 1901	Concepts in Biology (Advanced)	6	A) HSC 2-unit Biology course. P) UAI of at least 93 and at least 80% in HSC 2-unit Biology or equivalent, or by invitation, or a UAI of at least 95 (if no University level biology units have been taken), or Distinction or better for BIOL 1002, 1003, 1902 or 1903. N) May not be counted with BIOL 1001 *NB: Changes to prerequisites subject to Faculty approval.*	*Februaiy*
BIOL 1002	Living Systems	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1902	*July*
BIOL 1902	Living Systems (Advanced)	6	A) HSC 2-unit Biology course. P) UAI of at least 93 and at least 80% in HSC 2-unit Biology or equivalent, or by invitation, or a UAI of at least 95 (if no University level biology units have been taken), or a Distinction or better in BIOL 1001 or 1901. N) May not be counted with BIOL 1002 *NB: Changes to prerequisites subject to Faculty approval.*	*July*
BIOL 1003	Human Biology	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1903	*July*
BIOL 1903	Human Biology (Advanced)	6	A) HSC 2-unit Biology course. P) UAI of at least 93 and at least 80% in HSC 2-unit Biology or equivalent, or by invitation, or a UAI of at least 95 (if no University level biology units have been taken), or a Distinction or better in BIOL 1001 or BIOL 1901. N) May not be counted with BIOL 1003 *NB: Changes to prerequisites subject to Faculty approval.*	*July*
BIOL 1500	Biology Today	6	A) No previous knowledge required. N) May not be counted with BIOL 1001, 1901, 1002, 1902, 1003, 1903. May not be counted as a prerequisite for any Intermediate units of study in Biology.	*July*

Chemistry

CHEM 1001	Fundamentals of Cheinistry 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) May not be counted with CHEM 1101 or 1901 or 1903	*Februaiy*
CHEM 1002	Fundamentals of Chemistry 1B	6	P) CHEM 1001 or equivalent. N) May not be counted with CHEM 1102 or 1902 or 1904	*July*
CHEM 1101	Chemistry 1A	6	A) HSC Mathematics 2 unit course; and the Chemistry component of the 4-unit or 3-unit HSC Science course, or 2-unit Chemistry. C) Recommended concurrent unit of study: Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. N) May not be counted with CHEM 1001 or 1901 or 1903.	*February, July*
CHEM 1102	Chemistry 1B	6	Q) CHEM 1101 or a Distinction in CHEM 1001 or equivalent. C) Recommended concurrent unit of study: Preferred - MATH1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904; otherwise - MATH1004 and 1005 or 1013 and 1015. N) May not be counted with CHEM 1002 or 1902 or 1904.	*Februaiy, July*
CHEM 1901	Chemistry 1A (Advanced)	6	P) UAI of at least 92.5 and at least 75% in HSC 2-unit Chemistry or equivalent; by invitation. C) Recommended concurrent unit of study: Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. N) May not be counted with CHEM 1001 or 1101 or 1903.	*February*
CHEM 1902	Chemistry IB (Advanced)	6	Q) CHEM 1901 or 1903 or Distinction in CHEM 1101 or equivalent; by invitation. C) Recommended concurrent unit of study: Preferred — MATH 1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904, otherwise — MATH 1013 and 1015 or 1004 and 1005. N) May not be counted with CHEM 1002 or 1102 or 1904.	*July*

Table 1: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
CHEM 1903	Chemistry 1A (Special Studies Program)	6	P) UAI of at least 98.7 and at least 85% in HSC 2-unit Chemistry or equivalent. Entry is by invitation. C) Recommended concurrent unit of study: Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. Students in the Faculty of Science Talented Students Program are automatically eligible. For the purpose of Resolution 11 this unit of study is deemed to be designated as an Advanced unit of study. N) May not be counted with CHEM 1001 or 1101 or 1901.	*February*
CHEM 1904	Chemistry IB (Special Studies Program)	6	P) Distinction in CHEM 1903; by invitation. C) Recommended concurrent unit of study: Preferred — MATH 1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904; otherwise — MATH 1013 and 1015 or 1004 and 1005. N) May not be counted with CHEM 1002 or 1102 or 1902.	*July*

Computer Science

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e)	(f) Offered
COMP 1001	Introductory Programming	6	A) HSC 3-unit Mathematics. C) Students intending to major in Computer Science are advised to enrol in MATH 1003 and 1004 or 1004 and 1005 or 1903 and 1904 or 1904 and 1905 in their first year. N) May not be counted with COMP 1901.	*February, July*
COMP 1901	Introductory Programming (Advanced)	6	A) HSC 3-unit Mathematics (Requires permission by the Head of Department). N) May not be counted with COMP 1001	*February, July*
COMP 1002	Introductory Computer Science	6	P) COMP 1001 or 1901. N) May not be counted with COMP 1902	*February, July*
COMP 1902	Introductory Computer Science (Advanced)	6	P) Distinction in COMP 1901 or 1001. N) May not be counted with COMP 1002	*February, July*
INFO 1000	Information Technology Tools	6		*February, July*

Geography

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e)	(f) Offered
GEOG 1001	Biophysical Environments	6		*February*
GEOG 1002	Human Environments	6		*July*

Geology

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e)	(f) Offered
GEOL 1001	Earth and Its Environment	6	A) No previous knowledge of Geology assumed. P) See prerequisites for Intermediate Geology.	*February*
GEOL 1002	Earth Processes and Resources	6	A) No previous knowledge of Geology assumed.	*July*

Mathematics

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e)	(f) Offered
MATH 1011	Life Sciences Calculus	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1901 or 1001. May not be counted by students enrolled in the BSc/BCom combined award course.	*February*
MATH 1012	Life Sciences Algebra	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1002 or 1902. May not be counted by students enrolled in the BSc/BCom combined award course.	*July*
MATH 1013	Life Sciences Difference and Differential Equations	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1003 or 1903. May not be counted by students enrolled in the BSc/BCom combined award course.	*July*
MATH 1015	Life Sciences Statistics	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1905 or 1005. May not be counted by students enrolled in the BSc/BCom combined award course.	*February*
MATH 1001	Differential Calculus	3	A) HSC 3-unit Mathematics. N) May not be counted with MATH 1901 or 1011	*February*
MATH 1002	Linear Algebra	3	A) HSC 3-unit Mathematics. N) May not be counted with MATH 1902 or 1012	*February*

Table 1: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
MATH 1003	Integral Calculus and Modelling	3	A) HSC 4-unit Mathematics or MATH 1001. N) May not be counted with MATH 1903 or 1013	*July*
MATH 1004	Discrete Mathematics	3	A) HSC 3-unit Mathematics. N) May not be counted with MATH 1904	*July*
MATH 1005	Statistics	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1905 or 1015	*July*
MATH 1901	Differential Calculus (Advanced)	3	A) HSC 4-unit Mathematics or top decile 3-unit Mathematics. N) May not be counted with MATH 1001 or 1011	*February*
MATH 1902	Linear Algebra (Advanced)	3	A) HSC 4-unit Mathematics or top decile 3-unit Mathematics. N) May not be counted with MATH 1002 or 1012	*February*
MATH 1903	Integral Calculus and Modelling (Advanced)	3	A) HSC 4-unit Mathematics or Credit in (MATH 1901 or MATH 1001). N) May not be counted with MATH 1003 or 1013	*July*
MATH 1904	Discrete Mathematics (Advanced)	3	A) HSC 4-unit Mathematics or top decile 3-unit Mathematics. N) May not be counted with MATH 1004	*July*
MATH 1905	Statistics (Advanced)	3	A) HSC 3-unit Mathematics (50 percentile). N) May not be counted with MATH 1005 or 1015	*July*

Physics

PHYS 1001	Physics (Regular)	6	A) HSC Physics or HSC 4-unit Science. C) Recommended concurrent units of study: MATH 1001 and 1002 or 1901 and 1902. N) May not be counted with PHYS 1002 or 1901.	*Februaiy*
PHYS 1002	Physics (Fundamentals)	6	A) No assumed knowledge of Physics. C) Recommended concurrent unit of study: MATH 1001 and 1002 or 1901 and 1902. N) May not be counted with PHYS 1001 or 1901.	*Februaiy*
PHYS 1901	Physics (Advanced) A	6	P) UAI at least that for acceptance into BSc (Advanced) program or at least 90 in HSC 2-unit Physics or a least 180 in HSC 4-unit Science or Distinction or better ᴸ in PHYS 1003. C) Recommended concurrent unit of study: MATH 1001 and 1002 or 1901 and 1902. N) May not be counted with PHYS 1001 or 1002.	*February*
PHYS 1003	Physics (Technological)	6	A) HSC 2-unit Physics or HSC 4-unit Science or PHYS 1001 or 1002 or 1901 or equivalent. C) Recommended concurrent unit of study: MATH 1003 and 1005 or 1903 and 1905. N) May not be counted with PHYS 1004 or 1902.	*Februaiy, July*
PHYS 1004	Physics (Environmental and Life Sciences)	6	A) HSC 2-unit Physics or HSC 4-unit Science or PHYS 1001 or 1002 or 1901 or equivalent. C) Recommended concurrent unit of study: MATH 1003 and 1005 or 1903 and 1905. N) May not be counted with PHYS1003 or 1902.	*July*
PHYS 1500	Astronomy	6	A) No assumed knowledge of Physics.	*July*
PHYS 1902	Physics (Advanced) B	6	P) UAI at least that for acceptance into BSc(Advanced) program, or at least 90 in HSC 2-unit Physics or at least 180 in HSC 4-unit Science or PHYS 1901 or Distinction or better in PHYS 1001. C) Recommended concurrent unit of study: MATH 1003 and 1005 or 1903 and 1905. N) May not be counted with PHYS 1003 or 1004.	*July*

Psychology

PSYC 1001	Psychology 1001	6		*Februaiy*
PSYC 1002	Psychology 1002	6		*July*

Table 1: Bachelor of Science -   continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	ffl Offered

B. Intermediate Units of Study

Agricultural Chemistry

| AGCH 2001 | Molecular Processes in Ecosystems | 8 | Q) CHEM 1002 or equivalent.
P) BIOL 1002 or 1902 Students who have not satisfied the prerequisites in Biology may enrol with SOIL 2001 as a corequisite.
N) May not be counted with any Intermediate unit of study in Biochemistry. | *February* |

Anatomy and Histology

ANAT 2001	Principles of Histology	4	P) 12 credit points of Junior Biology or Junior Psychology.	*Februaiy*
ANAT 2002	Comparative Primate Anatomy	4	P) 12 credit points of Junior Biology or Junior Psychology.	*July*
ANAT 2003	Concepts in Neuroanatomy	4	A) Background in basic mammalian biology. P) BIOL (1001 or 1901) and BIOL (1002 or 1902 or BIOL 1003 or 1903) OR PSYC 1001 and PSYC 1002.	*July*
ANAT 2004	Principles of Development	4	Q) ANAT 2001.	*July*

Biochemistry

BCHM 2001	Genes and Proteins	8	Q) 6 credit points of Junior Chemistry which must include one of CHEM 1101, 1102, 1901, 1902, 1903, 1904 or, with the permission of the Head of Department, exceptional performance in CHEM 1001 or 1002. N) May not be counted with AGCH 2001 or BCHM 2101 or 2901	*February*
BCHM 2002	Molecules, Metabolism and Cells	8	Q) BCHM 2001 or 2901. N) May not be counted with AGCH 2001 or BCHM 2102 or 2902	*July*
BCHM 2101	Genes and Proteins Theory	4	Q) 6 credit points of Junior Chemistry which must include one of CHEM 1101, 1102, 1901, 1902, 1903, 1904 or, with the permission of the Head of Department, exceptional performance in CHEM 1001 or 1002. N) May not be counted with AGCH 2001 or BCHM 2001 or 2901	*February*
BCHM 2102	Molecules, Metabolism and Cells Theory	4	Q) BCHM 2001, 2101 or 2901. N) May not be counted with AGCH 2001 or BCHM 2002 or 2902	*July*
BCHM 2901	Genes and Proteins (Advanced)	8	Q) 6 credit points of Junior Chemistry which must include one of CHEM 1101, 1102, 1901, 1902, 1903, 1904 or, with the permission of the Head of Department, exceptional performance in CHEM 1001 or 1002 (selected students). N) May not be counted with AGCH 2001 or BCHM 2001 or 2101	*February*
BCHM 2902	Molecules, Metabolism and Cells (Advanced)	8	Q) BCHM 2001 or 2901 (selected students). N) May not be counted with AGCH 2001 or BCHM 2002 or 2102	*July*

Biology

| BIOL 2001 | Animals A | 8 | Q) BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903.
P) CHEM 1102 or 1902 or 1904 or 1909.
N) May not be counted with BIOL 2101 or 2901.
NB: Tlie content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concuirently with (orfollowing completion of) BIOL 2004 or 2904 or 2006 or 2906 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concuirently, must elect at enrolment in which unit they wish to do the alternative work. Changes to prerequisistes subject to Faculty approval. | *Februaiy* |
| BIOL 2901 | Animals A (Advanced) | 8 | Q) Distinction average in BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. These requirements may be varied and students with lower averages should consult the Unit Executive Officer.
P) CHEM 1102 or 1902 or 1904 or 1909.
N) May not be counted with BIOL 2001 or 2101.
NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concuirently with (or following completion of) BIOL 2004 or 2904 or 2006 or 2906 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concuirently, must elect at enrolment in which unit they wish to do the alternative work. Changes to prerequisistes subject to Faculty approval. | *Februaiy* |

Table 1: Bachelor of Science -   continued

(a) Unit of Study		(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
BIOL 2101	Animals A - Theory	4	Q) BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. N) May not be counted with BIOL 2001 or 2901. *NB: The content of BIOL 1002/1902 is assumed biowledge and students entering from BIOL 1003 or 1903 will need to do some preparatoiy reading. Not a prerequisite for Senior units of study in Biology. Students taking this unit concurrently with (orfollowing completion of) BIOL 2004 or 2904 or 2006 or 2906 must complete 16 hours of alternative work in one unit, in place of the core material common to both units. Students taking BIOL 2101 concurrently with (or following completion of) BIOL 2106 must complete 16 hours of alternative work in place of the core material common to both units, and if taking these units, concurrently, must elect at enrolment in which unit they wish to do the alternative work*	*February*
BIOL 2002	Animals B	8	Q) BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. P) CHEM 1102 or 1902 or 1904 or 1909. N) May not be counted with BIOL 2102 or 2902. *NB: The content of Biology 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatoiy reading. Students taking this unit concurrently with (or following completion of) BIOL 2003 or 2903 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work Students talcing BIOL 2002 concurretnlty with BIOL 2005 or 2905 must complete the 32 hours of alternative work as part of BIOL 2002. Changes to prerequisistes subject to Facidty approval.*	*July*
BIOL 2902	Animals B (Advanced)	8	Q) Distinction average in BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. P) CHEM 1102 or 1902 or 1904 or 1909. N) May not be counted with BIOL 2002 or 2102. *NB: The content of BIOL 1002/1902 is assumed biowledge and students entering fi-om BIOL 1003 or 1903 will need to do some preparatoiy reading. Students taking this unit concurrently with (or following completion of) BIOL 2003 or 2903 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work. Students taking BIOL 2902 concurretnlty with BIOL 2005 or 2905 must complete the 32 hours of alternative work as part of BIOL 2902. Changes to prerequisistes subject to Faculty approval.*	*July*
BIOL 2102	Animals B - Theory	4	Q) BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. N) May not be counted with BIOL 2002 or 2902. *NB: Tire content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Not a prerequisite for Senior units of study in Biology. Students taking this unit concurrently with (or following completion of) BIOL 2003 or 2903 or 2002 or 2905 must complete 16 hours of alternative work in one unit, in place of the core material. Students taking BIOL 2102 concurretnlty with (or following completion of) BIOL 2105 must complete 16 hours of alternative work as part of BIOL 2102 in place of core material common to both units.*	*July*
BIOL 2003	Plant Anatomy and Physiology	8	Q) BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. N) May not be counted with BIOL 2903. *NB: The content of Biology 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (orfollowing completion of) BIOL 2002 or 2902 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work. Students taking BIOL 2003 concurretnlty with BIOL 2005 or 2905 must complete the 32 hours of alternative work as part of BIOL 2003.*	*July*
BIOL 2903	Plant Anatomy and Physiology (Advanced)	8	Q) Distinction average in BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N) May not be counted with BIOL 2003. *NB: The content of BIOL1002/1902 is assumed biowledge and students entering from BIOL 1003 or 1903 will need to do some preparatoiy reading. Students taking this unit concurrently with (orfollowing completion of) BIOL 2002 or 2902 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work. Students tabng BIOL 2903 concurretnlty with BIOL 2005 or 2905 must complete the 32 hours of alternative work as part of BIOL 2903.*	*July*

Table 1: Bachelor of Science - continued

(a) Unit of Study		(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
BIOL 2004	Plant Ecology and Diversity	8	Q) BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. N) May not be counted with BIOL 2904. *MB: The content of Biology 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatoiy reading. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2006 or 2906 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.*	*February*
BIOL 2904	Plant Ecology and Diversity (Advanced)	8	Q) Distinction average in BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N) May not be counted with BIOL 2004. *NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatoiy reading. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2006 or 2906 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work.*	*February*
BIOL 2005	Molecular and General Genetics	8	Q) BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. P) CHEM 1102 or 1902 or 1904 or 1909 . BCHM 2001 or 2901 and BIOL 2006 or 2906 are highly recommended. N) May not be counted with BIOL 2105 or 2905. *NB: Students taking this unit concurrently with (or following completion of) BIOL 2002 or 2902 or 2003 or 2903 must complete 32 hours of alternative work in the unit other than BIOL 2005, in place of the core material common to both units. Students enrolling in BIOL 2005 after having completed BIOL 2002 or 2902 or 2003 or 2903 will be required to complete 32 hours of alternative work in BIOL 2005. Changes to prerequisistes subject to Faculty approval.*	*July*
BIOL 2905	Molecular and General Genetics (Advanced)	8	Q) Distinction average in BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. P) CHEM 1102 or 1902 or 1904 or 1909. BCHM 2001 or 2901 and BIOL 2006 or 2906 are highly recommended. N) May not be counted with BIOL 2005 or 2105. *NB: Students taking this unit concurrently with (or following completion of) BIOL 2002 or 2902 or 2003 or 2903 must complete 32 hours of alternative work in the unit other than BIOL 2005, in place of the core material common to both units. Students enrolling in BIOL 2005 after having completed BIOL 2002 or 2902 or 2003 or 2903 will be required to complete 32 hours of alternative work in BIOL 2005. Changes to prerequisites subject to Faculty approval.*	*July*
BIOL 2105	Molecular and General Genetics - Theory	4	Q) BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. P) CHEM 1102 or 1902 or 1904 or 1909. N) May not be counted with BIOL 2005 or 2905. *NB: Not a prerequisite for Senior units of study in Biology. Students taking this unit concurrently with (or following completion of) BIOL 2002 or 2902 or 2003 or 2903 must complete 16 hours of alternative work BIOL 2105, in place of the core material common to both units. Students taking BIOL 2105 concurretnlty with (or following completion of) BIOL 2102 must complete 16 hours of alternative work in place of core material common to both units, and if these units are taken concurrently, must elect at enrolment in which unit they wish to do the alternative work. Changes to prerequisistes subject to Faculty approval.*	*July*
BIOL 2006	Cell Biology	8	Q) BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. P) CHEM 1102 or 1902 or 1904 or 1909. N) May not be counted with BIOL 2106 or 2906. *NB: Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2004 or 2904 must complete 32 hours of alternative work in one unit, in place of the core material common to both and, if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work. Changes to prerequisistes subject to Faculty approval.*	*February*

Table I: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
BIOL 2906	Cell Biology (Advanced)	8	Q) Distinction average in BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. P) CHEM 1102 or 1902 or 1904 or 1909. N) May not be counted with BIOL 2006 or 2106. *NB: Students taking this unit concurrently with (or following completion oj) BIOL 2001 or 2901 or 2004 or 2904 must complete 32 hours of alternative work in one unit, in place of the core material common to both and, if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work. Changes to prerequisites subject to Faculty approval.*	*February*
BIOL 2106	Cell Biology - Theory	4	Q) BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. P) CHEM 1102 or 1902 or 1904 or 1909. N) May not be counted with BIOL 2006 or 2906. *NB: Not a prerequisite for Senior units of study in Biology. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2004 or 2904 must complete 16 hours of alternative work, in place of the core material common to both. Students taking BIOL 2106 concurrenlty with (or following completion of) BIOL 2101 must complete 16 hours of alternative work in place of core material common to both units, and if these units are taken concurrently, must elect at enrolment in which unit they wish to do the alternative work. Changes to prerequisistes subject to Faculty approval.*	*February*
BIOL 2007	Introductory Entomology	8	Q) BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. P) CHEM 1102 or 1902 or 1904 or 1909. *NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. See prerequisites for Senior units of study in Biology. Changes to prerequisistes subject to Faculty approval.*	*July*

Chemistry

CHEM 2001	Chemistry 2 (Life Sciences)	8	Q) CHEM 1102 or 1902 or 1904 or 1909. P) 6 credit points of Junior Mathematics. N) May not be counted with CHEM 2101 or 2301 or 2502 or 2901	*February*
CHEM 2101	Chemistry 2 (Environmental	8	Q) CHEM 1102 or 1902 or 1904 or 1909. P) 6 credit points of Junior Mathematics. N) May not be counted with CHEM 2001 or 2301 or 2502 or 2901	*February*
CHEM 2301	Chemistry 2A	8	Q) CHEM 1102 or 1902 or 1904 or 1909. P) 6 credit points of Junior Mathematics. N) May not be counted with CHEM 2001 or 2101 or 2502 or 2901	*February, July*
CHEM 2302	Chemistry 2B	8	P) CHEM 2001 or 2101 or 2301 or 2502 or 2901. N) May not be counted with CHEM 2202 or 2902	*February, July*
CHEM 2502	Chemistry 2 (Forensic)	8	Q) CHEM 1102 or 1902 or 1904 or 1909. P) 6 credit points of Junior Mathematics. N) May not be counted with CHEM 2001 or 2101 or 2301 or 2901	*February*
CHEM 2901	Chemistry 2A (Advanced)	8	Q) WAM greater than 80 and Distinction average in CHEM 1101 or 1901 or 1903 and in Chemistry 1102 or 1902 or 1904 or 1909. P) 6 credit points of Junior Mathematics; by invitation. N) May not be counted with CHEM 2001 or 2101 or 2301 or 2502. *NB: Entry to this unit of study is by invitation. Students in the Faculty of Science Talented Students Program are automatically eligible.*	*February*
CHEM 2902	Chemistry 2B (Advanced)	8	P) CHEM 2901, but see unit description; by invitation. N) May not be counted with CHEM 2202 or 2302	*July*

Computer Science

COMP 2001	Computer Systems	4	Q) COMP 1002 or 1902. N) May not be counted with COMP 2901. *NB: See prerequisites for Senior Computer Science units of study. Consult Departmental Handbook.*	*February*
COMP 2901	Computer Systems (Advanced)	4	Q) Distinction in COMP 1902 or 1002. N) May not be counted with COMP 2001	*February*

Table 1: Bachelor of Science - continued

(a) Unit of Study		(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
COMP 2002	Design and Data Structures	4	Q) COMP 1002 or 1902. N) May not be counted with COMP 2902. *NB: See prerequisites for Senior Computer Science units of study. Consult Departmental Handbook.*	*February*
COMP 2902	Design and Data Structures (Advanced)	4	Q) Distinction in COMP 1902 or 1002. N) May not be counted with COMP 2002	*February*
COMP 2003	Languages and Logic	4	Q) COMP 1002 or 1902. P) MATH 1004 or 1904 or Econometrics or MATH 2009. N) May not be counted with COMP 2903. *NB: See prerequisites for Senior Computer Science units of study. Consult Departmental Handbook.*	*July*
COMP 2903	Languages and Logic (Advanced)	4	Q) Distinction in COMP 1902 or 1002. P) MATH 1004 or 1904 or Econometrics or MATH 2009. N) May not be counted with COMP 2003	*July*
COMP 2004	Programming Practice	4	Q) COMP 1002 or 1902. N) May not be counted with COMP 2904. *NB: See prerequisites for Senior Computer Science units of study. Consult Departmental Handbook.*	*July*
COMP 2904	Programming Practice (Advanced)	4	Q) Distinction in COMP 1902 or 1002. N) May not be counted with COMP 2004.	*July*
INFO 2000	System Analysis and Design	4	Q) INFO 1000 or COMP 1000 or COMP 1001 or COMP 1901. N) May not be counted with COMP 2000	*February*
INFO 2005	Personal Database Tools	4	Q) INFO 1000 or COMP 1000 or COMP 1001 or COMP 1901. N) Not available to students who have completed COMP 3005 or 3905 or COMP 2005	*July*
INFO 2007	Distributed Information Systems	4	Q) INFO 1000 or COMP 1000 or COMP 1001 or COMP 1901.	*February*

Engineering Science - Civil and Chemical

ENGS 2201	Civil Engineering Science 2A	12	P) CHEM 1102 or 1902 or 1904 or 12 credit points of Junior Physics or 12 credit points of Junior Mathematics.	*Februaty*
ENGS 2202	Civil Engineering Science 2B	4		*July*
CHNG 2101	Chemical Engineering 2A	4		*Februaty*
CHNG 2102	Chemical Engineering 2B	4		*July*

Geography

GEOG 2001	Processes in Geomorphology	8	P) GEOG 1001 orENVI 1002. N) Other Information: A candidate who has completed 12 Junior credit points of Mathematics and 12 Junior credit points of Physics or Chemistry and who has not taken GEOG 1001 or 1002 may apply under Section 1 (4) for permission to enrol in any Intermediate Geography unit of study. The School of Geosciences is not normally prepared to support applications under Section 1 (4) to enrol in Intermediate Geography units of study from persons other than those who, in their first year of studies, have completed four Junior units of study above the concessional pass grade and have not subsequently failed in any Intermediate unit of study.	*February*
GEOG 2002	Fluvial and Coastal Geography	8	P) GEOG 1001 or ENVI 1002. N) Other Information: As for GEOG 2001	*July*
GEOG 2101	Environmental Change and Human Response	8	P) GEOG 1001 or 1002 orENVI 1002. N) Other Information: As for GEOG 2001	*February*
GEOG 2102	Resource and Environmental Management	8	P) GEOG 1001 or 1002 orENVI 1002. N) Other Information: As for GEOG 2001	*July*
GEOG 2201	Social and Urban Geography	8	P) GEOG 1002 or ENVI 1002. N) Other Information: As for GEOG 2001	*February*

Table 1: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	ffl Offered
GEOG 2202	Economic and Political Geography	8	P) GEOG 1002 or ENVI 1002. N) Other Information: As for GEOG 2001	*July*

Geology

GEOL 2001	Plate Tectonics and Materials	8	P) GEOL 1002 or ENVI 1001. A candidate who has completed 24 credit points of Junior units of study in Physics and Chemistry and who has not taken Junior Geology or ENVI 1001, may apply under section 1 (4) for permission to enrol in GEOL 2001.	*February*
GEOL 2002	Resource Exploration	4	P) GEOL 2001.	*July*
GEOL 2003	Fossils and Time	4	P) 24 credit points of Science units of study.	*July*
GEOL 2004	Environmental Geology: Hazards	4	P) 24 credit points of Science units of study. See prerequisites for Senior Geology.	*February*
GEOL 2005	Environmental Geology: Resources	4	P) 24 credit points of Science units of study. See prerequisites for Senior Geology.	*July*

History and Philosophy of Science

HPSC 2001	What is this thing called Science?	4	P) 24 credit points of Junior units of study. This is a qualifying unit of study for Senior History and Philosophy of Science units of study.	*July*
HPSC 2002	The Birth of Modern Science	4	P) 24 credit points of Junior units of study. This is a qualifying unit of study for Senior History and Philosophy of Science units of study.	*February*

Immunology

IMMU 2001	Introductory Immunology	4	Q) 12 credit points of Junior Chemistry and 12 credit points of Junior Biology or, with permission of Head of Department, 24 credit points of Junior study from any of the Science Discipline Areas. *NB: Tliis is a qualifying unit of study for IMMU 3001 (currently BMed 3003).*	*July*

Information Systems

INFO 2000	System Analysis and Design	4	Q) INFO 1000 or COMP 1000 or COMP 1001 or COMP 1901. N) May not be counted with COMP 2000	*February*
INFO 2005	Personal Database Tools	4	QJINFO 1000 or COMP 1000 or COMP 1001 or COMP 1901. N) Not available to students who have completed COMP 3005 or 3905 or COMP 2005	*July*
ISYS 2006	Information Systems in Organisations	4	Q) INFO 1000. *NB: Not offered in 2000.*	*July*
INFO 2007	Distributed Information Systems	4	Q) INFO 1000 or COMP 1000 or COMP 1001 or COMP 1901.	*February*

Marine Sciences

MARS 2001 A	Introductory Marine Science	4	P) 24 credit points of Junior units of study from Science Discipline Areas. This is a qualifying unit of study for MARS 3001 and 3002. Some options in Senior Marine Science have additional prerequisites.	*February*
MARS 2002 B	Introductory Marine Science	4	P) As for MARS 2001.	*July*

Mathematics

MATH 2001	Vector Calculus and Complex Variables	4	P) MATH (1001 or 1901) and (1002 or 1902) and (1003 or 1903). N) May not be counted with MATH 2901	*February*
MATH 2002	Matrix Applications	4	P) MATH 1002 or 1902 or Distinction in MATH 1012. N) May not be counted with MATH 2902	*February*
MATH 2003	Introduction to Mathematical Computing	4	P) MATH (1001 or 1901) and (1002 or 1902) and (1003 or 1903). N) May not be counted with MATH 2903	*February*
MATH 2004	Lagrangian Dynamics	4	P) MATH 2001 or 2901. N) May not be counted with MATH 2904	*July*
MATH 2005	Fourier Series and Differential Equations	4	P) MATH (1001 or 1901) and MATH (1002 or 1902) and MATH (1003 or 1903). N) May not be counted with MATH 2905	*July*

Table 1: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
MATH 2006	Introduction to Nonlinear Systems and Chaos	4	P) MATH (1001 or 1901) and (1002 or 1902) and (1003 or 1903) or (Credit in MATH 1011 and 1012 and 1013). N) May not be counted with MATH 2906	*February*
MATH 2007	Analysis	4	P) MATH (1001 or 1901) and (1003 or 1903) or Distinction average in MATH 1011 and 1013. N) May not be counted with MATH 2907	*July*
MATH 2008	Introduction to Modern Algebra	4	P) MATH 2002 or 2902. N) May not be counted with MATH 2908	*July*
MATH 2009	Graph Theory	4	P) 6 credit points of Junior Mathematics (at the Distinction level in Life Sciences units).	*February*
MATH 2010	Optimisation	4	P) MATH (1001 or 1901) and (1002 or 1902) and (1003 or 1903) (strongly advise MATH 2002 or 2902). N) May not be counted with Econometrics 3510 Operations Research A.	*July*
MATH 2033	Financial Mathematics I	4	P) MATH (1001 or 1901) and MATH (1002 or 1902) and MATH (1003 or 1903) and MATH (1005 or 1905).	*February*
MATH 2901	Vector Calculus and Complex Variables (Advanced)	4	P) MATH (1901 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or Credit in 1003). C) Strongly advise MATH 2002 or MATH 2902. N) May not be counted with MATH 2001	*February*
MATH 2902	Linear Algebra (Advanced)	4	P) 12 credit points of Junior Mathematics, including MATH 1902 or Credit in 1002. N) May not be counted with MATH 2002	*February*
MATH 2903	Introduction to Mathematical Computing (Advanced)	4	P) MATH (1901 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or Credit in 1003). N) May not be counted with MATH 2003	*February*
MATH 2904	Lagrangian Dynamics (Advanced)	4	P) MATH 2901 or Credit in MATH 2001. N) May not be counted with MATH 2004	*July*
MATH 2905	Mathematical Methods (Advanced)	4	P) MATH 2901 or Credit in MATH 2001. N) May not be counted with MATH 2005	*July*
MATH 2906	Introduction to Nonlinear Systems and Chaos (Advanced)	4	P) MATH (1901 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or Credit in 1003). N) May not be counted with MATH 2006	*February*
MATH 2907	Analysis (Advanced)	4	P) MATH (1901 or Credit in 1001) and (1903 or Credit in 1003) (MATH 2901 or 2001 strongly advised). N) May not be counted with MATH 2007	*July*
MATH 2908	Differential Equations and Group Theory (Advanced)	4	P) MATH 2902. N) May not be counted with MATH 2008	*July*
MATH 2933	Financial Mathematics I (Advanced)	4	P) MATH (1901 or credit in 1001) and MATH (1902 or credit in 1002) and MATH (1903 or credit in 1003) and MATH (1905 or credit in 1005).	*February*

Engineering Science - Mechanical

MECH 2201	Thermodynamics 1	4	N) May not be counted with MECH 2200	*February*
MECH 2202	Fluids 1	2	N) May not be counted with MECH 2200	*February*
MECH 2400	Mechanical Design 1	6	P) 12 credit points each of Junior Mathematics and Junior Physics.	*July*
MECH 2500	Engineering Dynamics 1	4	P) 12 credit points each of Junior Mathematics and Junior Physics.	*July*

Microbiology

MICR 2001	Introductory Microbiology	8	Q) BIOL 1002 or 1902 or 1003 or 1903. P) CHEM 1102 or 1902 or 1904. C) BIOL 1001 or 1901 and CHEM 1101 or 1901 or 1903 and MATH (1001 or 1011 or 1901) and (1005 or 1015 or 1905). N) May not be counted with MICR 2003 or 2901	*February*

Table 1: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
MICR 2002	Applied Microbiology	8	P) MICR 2001 or 2901. N) May not be counted with MICR 2004 or 2902	*July*
MICR 2003	Theoretical Microbiology A	4	Q) BIOL 1002 or 1902 or 1003 or 1903. P) CHEM 1102 or 1902 or 1904. C) BIOL 1001 or 1901 and CHEM 1101 or 1901 or 1903 and MATH (1001 or 1011 or 1901) and (1005 or 1015 or 1905). N) May not be counted with MICR 2001 or 2901	*February*
MICR 2004	Theoretical Microbiology B	4	P) MICR2001 or2003 or2901. N) May not be counted with MICR 2002 or 2902	*July*
MICR 2901	Introductory Microbiology (Advanced)	8	Q) Credit or better in BIOL 1002 or 1902 or 1003 or 1903 and at least a pass in CHEM 1102 or 1902 or 1904. C) BIOL 1001 or 1901 and CHEM 1101 or 1901 or 1903 and MATH (1001 or 1011 or 1901) and (1005 or 1015 or 1905). N) May not be counted with MICR 2001 or 2003	*February*
MICR 2902	Applied Microbiology (Advanced)	8	Q) Credit or better in MICR 2001 or in the equivalent components in MICR 2901. N) May not be counted with MICR 2002 or 2004	*July*

Pharmacology

PCOL 2001	Pharmacology Fundamentals	4	P) 6 credit points of Junior Chemistry (including CHEM 1101, 1901 or 1903), 6 credit points of Junior Biology, and 6 credit points of units of study from other Science Discipline Areas. *NB: Tliis is a qualifying unit of study for PCOL 3001 or 3002.*	*February*
PCOL 2002	Pharmacology - Drugs and People	4	P) 6 credit points of Junior Chemistry (including CHEM 1101, 1901 or 1903), 6 credit points of Junior Biology, and 6 credit points of units of study from other Science Discipline Areas. Students are strongly advised to complete PCOL 2001 before enrolling in PCOL 2002.	*July*

Physics

PHYS 2001	Physics (Technological) A	8	Q) 12 credit points of Junior Physics. P) 12 credit points of Junior Mathematics other than MATH 1011, 1012, 1013 and 1015 or Credit or better in MATH 1011, 1012, 1013 and 1015. This is a qualifying unit of study for Senior Physics. N) May not be counted with PHYS 2101 or 2103 or 2901	*February*
PHYS 2002	Physics (Technological) B	8	Q) 12 credit points of Junior Physics. P) 12 credit points of Junior Mathematics other than MATH 1011, 1012, 1013 and 1015 or Credit or better in MATH 1011, 1012, 1013 and 1015. This is a qualifying unit of study for Senior Physics. N) May not be counted with PHYS 2102 or 2104 or 2902	*July*
PHYS 2101	Physics (Environmental) A	8	Q) 12 credit points of Junior Physics. P) 12 credit points of Junior Mathematics other than MATH 1011, 1012, 1013 and 1015 or Credit or better in MATH 1011,1012, 1013 and 1015. This is a qualifying unit of study for Senior Physics. N) May not be counted with PHYS 2001 or 2103 or 2901	*February*
PHYS 2102	Physics (Environmental) B	8	Q) 12 credit points of Junior Physics. P) 12 credit points of Junior Mathematics other than MATH 1011, 1012, 1013 and 1015 or Credit or better in MATH 1011, 1012, 1013 and 1015. This is a qualifying unit of study for Senior Physics. N) May not be counted with PHYS 2002 or 2104 or 2902	*July*
PHYS 2103	Introduction to Environmental Physics	4	Q) 12 credit points of Junior Physics. P) 12 credit points of Junior Mathematics other than MATH 1011, 1012, 1013 and 1015 or Credit or better in MATH 1011, 1012, 1013 and 1015. This is not a qualifying unit of study for Senior Physics. N) May not be counted with PHYS 2001 or 2101 or 2901.	*February*
PHYS 2104	Applications of Environmental Physics	4	Q) 12 credit points of Junior Physics. P) 12 credit points of Junior Mathematics other than MATH 1011, 1012, 1013 and 1015 or Credit or better in MATH 1011, 1012, 1013 and 1015. This is not a qualifying unit of study for Senior Physics. N) May not be counted with PHYS 2002 or 2102 or 2902	*July*

BSc

Table

Table 1: Bachelor of Science - continued

(a) Unit of Study		(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
PHYS 2901	Physics (Advanced) A	8	Q) PHYS 1901 and 1902 or 12 credit points of other Junior Physics units of study with an average of a Credit or better. P) 12 credit points of Junior Mathematics other than MATH 1011, 1012, 1013 and 1015 or Credit or better in MATH 1011, 1012, 1013 and 1015. This is a qualifying unit of study for Senior Physics. N) May not be counted with PHYS 2001 or 2101 or 2103.	*February*
PHYS 2902	Physics (Advanced) B	8	Q) PHYS 1901 and 1902 or 12 credit points of other Junior Physics units of study with an average of a Credit or better. P) 12 credit points of Junior Mathematics other than MATH 1011, 1012, 1013 and 1015 or Credit or better in MATH 1011, 1012, 1013 and 1015. This is a qualifying unit of study for Senior Physics. N) May not be counted with PHYS 2002 or 2102 or 2104.	*July*

Physiology

PHSI 2001	Introductory Physiology A	4	P) 6 credit points of any March semester Junior Chemistry unit of study (eg: CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. N) May not be counted with PHSI 2101 *NB: Biology and Physics are strongly recommended prerequisites. PHSI 2001 is one of the recommended qualifying units for Senior Physiology units of study.*	*February*
PHSI 2002	Introductory Physiology B	4	P) 6 credit points of any March semester Junior Chemistry unit of study (eg: CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. N) May not be counted with PHSI2102 *NB: PHSI 2002 is one of the recommended qualifying units for Senior Physiology units of study.*	*July*
PHSI 2101	Physiology A	8	P) 6 credit points of any March semester Junior Chemistry unit of study (eg: CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. N) May not be counted with PHSI 2001. *NB: Biology and Physics are strongly recommended prerequisites, PHSI 2101 is one of the recommended Physiology qualifying units of study for PHSI 3001.*	*February*
PHSI 2102	Physiology B	8	P) 6 credit points of any March semester Junior Chemistry unit of study (eg: CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. N) May not be counted with PHSI 2001. *NB: Biology and Physics are strongly recommended prerequisites. PHSI 2101 is one of the recommended Physiology qualifying units of study for PHSI 3001.*	*July*

Psychology

PSYC 2111	Perception, Learning and Neuroscience	4	Q) PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry).	*February*
PSYC 2112	Psychological Statistics	4	Q) PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry).	*February*
PSYC 2113	Cognitive Processes and Social Psychology	4	Q) PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry).	*July*
PSYC 2114	Personality and Individual Differences	4	Q) PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry).	*July*

Soil Science

SOIL 2001	Soil Properties and Processes;	8	P) CHEM 1002 or equivalent and 12 credit points of Junior Mathematics or PHSY 1003 or 1004.	*February*
SOIL 2002	Soil Resources and Conservation	8	P) SOIL 2001 or GEOL 1002 or GEOL 2004 or GEOG 1001 or ENVT 2001. N) May not be counted with GEOG 3002	*July*

Statistics

STAT 2001	Statistical Distributions	4	P) MATH (1003 or 1903 or Credit in 1011) and MATH (1005 or 1905 or 1015). N) May not be counted with STAT 2901 *NB: Change of name subject to Faculty approval.*	*February*
STAT 2002	Data Analysis	4	P) MATH 1005 or 1905 or 1015 (or STAT 1021 for Arts students).	*February*

Table 1: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
STAT 2003	Estimation Theory	4	P) STAT 2001 or 2901. N) May not be counted with STAT 2903	*July*
STAT 2004	Hypothesis Testing	4	P) STAT 2002.	*July*
STAT 2901	Introduction to Probability (Advanced)	4	P) MATH (1903 or Credit in 1003) and MATH (1905 or Credit in 1005). N) May not be counted with STAT 2001	*February*
STAT 2903	Estimation Theory (Advanced)	4	P) STAT 2901 or Credit in STAT 2001. N) May not be counted with STAT 2003	*July*

C. Senior Units of Study

Agricultural Chemistry

AGCH 3001	Chemistry and Biochemistry of Ecosystems	12	P) AGCH 2001 or CHEM 2001 or 2101 or 2202 or 2301 or 2302 or 2902 or BCHM 2002 or 2092 or ENVI 2001 and 2002.	*July*
AGCH 3003	Food Chemistry and Biochemistry	12	P) AGCH 2001 or BCHM 2002 or 2902.	*Februaiy*

Anatomy and Histology

ANAT 3001	Microscopy and Histochemistry	12	Q) ANAT 2001.	*February*
ANAT 3002	Cells and Development	12	A) (i) an understanding of the basic structure of the vertebrates; (ii) an understanding of elementary biochemistry and genetics. Q) ANAT 2001. P) At least 8 credit points of Intermediate Biochemistry. N) May not be counted with ANAT 3003	*July*
ANAT 3003	Transmission and Scanning Electron Microscopy	12	Q) ANAT 2001. N) May not be counted with ANAT 3002	*July*
ANAT 3004	Cranial and Cervical Anatomy	6	Q) ANAT 2002.	*July*
ANAT 3006	Forensic Osteology	6	P) ANAT 2002. *NB: A quota of 15 exists for this unit of study.*	*Februaiy*
ANAT 3007	Visceral Anatomy	6	A) Some knowledge of basic mammalian biology. Q) ANAT 2002 or ANAT 2003.	*Februaiy*

Biochemistry

BCHM 3001	Molecular Biology and Structural Biochemistry	12	Q) BCHM 2002 or 2902, or with permission of Head of Department, BIOL 2005 or 2905 or excellent performance in BCHM 2001 or 2901 with a suitable Intermediate CHEM unit of study. N) May not be counted with BCHM 3901	*Februaiy*
BCHM 3002	Metabolic and Medical Biochemistry	12	Q) BCHM 2002 or 2902. N) May not be counted with BCHM 3902	*July*
BCHM 3901	Molecular Biology and Structural Biochemistry (Advanced)	12	Q) BCHM 2002 or 2902 or, with permission of Head of Department, BIOL 2005 or 2901, or excellent performance in BCHM 2001 or 2901 with suitable Intermediate Chemistry (selected students). N) May not be counted with BCHM 3001	*Februaiy*
BCHM 3902	Metabolic and Medical Biochemistry (Advanced)	12	Q) BCHM 2002 or 2902 (selected students). N) May not be counted with BCHM 3002	*July*

Biology

BIOL 3101	Ecophysiology	12	Q) 16 credit points of Intermediate Biology including BIOL 2002 or 2003 or 2006 or 2902 or 2903 or 2906. Students are advised to consult the School.	*Februaiy*
BIOL 3901	Ecophysiology (Advanced)	12	Q) Distinction aiverage 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) May not be counted with BIOL 3101	*Februaiy*

Table 1: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
BIOL 3201	Cellular and Systems Physiology	12	Q) 16 credit points of Intermediate Biology, including BIOL 2001 or 2901 and 2002 or 2902 or BIOL 2003 or 2006 or 2903 or 2906. Some modules have specific prerequisites; consult list of modules; students are advised to consult the School.	*July*
BIOL 3921	Cellular and Systems Physiology (Advanced)	12	Q) Distinction average in 16 credit points of Intermediate Biology including BIOL 2001 or 2901 and 2002 or 2902 or BIOL 2003 or 2006 or 2903 or 2906. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N) May not be counted with BIOL 3201	*July*
BIOL 3102	Evolution and Diversity of the Australian Biota (MS)	12	Q) 16 credit points of Intermediate Biology, including BIOL 2001 or 2901 and 2002 or 2902 or BIOL 2003 or 2903 and 2004 or 2904; or BIOL 2001 or 2901 and 2002 or 2902 and 2007. Some modules have specific prerequisites; consult list of modules; students are advised to consult the School. MARS 3001 students may take the Evolutionary Core without taking a module, or Marine Biology module without Core.	*February*
BIOL 3902	Evolution and Diversity of the Australian Biota (Advanced)	12	Q) Distinction average in 16 credit points of Intermediate Biology including BIOL 2001 or 2901 and 2002 or 2902 or Biology 2003 or 2903 and 2004 or 2904; or Biology 2001 or 2901 and 2002 or 2902 or 2007. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N) May not be counted with BIOL 3102	*Februaiy*
BIOL 3202	Ecology (MS)	12	Q) BIOL 2001 or 2901 and 2002 or 2902 or 16 credit points of Intermediate Biology, including BIOL 2004 or 2904. Some modules have specific prerequisites; consult list of modules; students are advised to consult the School.	*July*
BIOL 3922	Ecology (Advanced)	12	Q) Distinction average in 16 credit points of Intermediate Biology including BIOL 2001 or 2901 and 2002 or 2902 or 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 UnitExecutive Officer. N) May not be counted with BIOL 3202	*July*
BIOL 3103	Molecular Genetics and Recombinant DNA Technology	12	Q) 16 credit points of Intermediate Biology including BIOL 2005 or 2905 (For BMedSc students BIOL 2005 or 2905). N) May not be counted with BIOL 3903	*February*
BIOL 3903	Molecular Genetics and Recombinant DNA Technology (Advanced)	12	Q) Distinction average in 16 credit points of Intermediate Biology including BIOL 2005 or 2905. (For BMedSc students: Distinction in BIOL 2005 or 2905.) These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N) May not be counted with BIOL 3103	*February*
BIOL 3203	Eukaryotic Genetics and Development	12	Q) 16 credit points of Intermediate Biology including BIOL 2005 or 2905 (For BMedSc students BIOL 2005 or 2905). N) May not be counted with BIOL 3904 or 3905	*July*
BIOL 3904	Eukaryotic Genetics and Development (Advanced)	12	Q) Distinction average in 16 credit points of Intermediate Biology including BIOL 2005 or 2905. (For BMedSc students: Distinction in BIOL 2005 or 2905) These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N) May not be counted with BIOL 3203 or 3905	*July*

Cell Pathology

CPAT 3001	Cell Pathology A	12	P) ANAT 2002 or BCHM 2002 or 2902, or BIOL 2005 or 2006 or 2905 or 2906, or both PCOL 2001 and 2002, or PHSI 2002 (For BMedSc, BMED 2101 and 2102). *NB: Students must contact the Department before enrolling. Only a small number of students can be accommodated in the laboratory facilities.*	*February*
CPAT 3101	Pathological Basis of Human. Disease	12	Q) ANAT 2001; or BCHM 2001 or 2002 or 2101 or 2102 or 2901 or 2902; or BIOL 2001 or 2002 or 2005 or 2006 or 2101 or 2102 or 2105 or 2106 or 2901 or 2902 or 2905 or 2906; or HPSC 2001 or 2002; or MICR 2001 or 2003 or 2901; or PCOL 2001; or PHSI 2001 (For BMedSc: BMED 2101 and 2102).	*July*

Chemistry

CHEM 3101	Chemistry 3A	12	Q) CHEM 2202 or 2302 or 2902. N) May not be counted with CHEM 3901 (but may be counted with CHEM 3201)	*February*
CHEM 3102	Chemistry 3B	12	Q) CHEM 2202 or 2302 or 2902. N) May not be counted with CHEM 3902 (but may be counted with CHEM 3202)	*July*

Table 1: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(dV(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(!) Offered
CHEM 3901	Chemistry 3A (Advanced)	12	Q) Distinction average in CHEM 2001 or 2101 or 2301 or 2901 and in CHEM 2202 or 2302 or 2902; by invitation. N) May not be counted with CHEM 3101 (but may be counted with CHEM 3201). *NB: The number of places in this unit of study is limited and entry is by invitation. Applications are invited from students with a high WAM and an excellent record in Intermediate Chemistry. Students in the Faculty of Science Talented Student Program are automatically eligible.*	*February*
CHEM 3902	Chemistry 3B (Advanced)	12	Q) Distinction or better in CHEM 2902 or 3101 or 3901; by invitation. N) May not be counted with CHEM 3102. *NB: The number of places in this unit of study is limited and entry is by invitation. Students in the Faculty of Science Talented Student Program are automatically eligible.*	*July*
CHEM 3201	Chemistry 3A Additional	12	Q) CHEM 2202 or 2302 or 2902. P) orCoreqCHEM 3101 or 3901.	*February*
CHEM 3202	Chemistry 3B Additional	12	Q) CHEM 2202 or 2302 or 2902. P) orCoreqCHEM 3102 or3902.	*July*

Computer Science

(a) Unit of Study	(b)	(c) Credit Points	(dV(e)	(!) Offered
COMP 3001	Algorithms	4	Q) COMP 2002 or 2902. P) MATH 1004 or 1904 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. N) May not be counted with COMP 3901 *NB: Change to semester availability subject to Faculty approval.*	*July*
COMP 3901	Algorithms (Advanced)	4	Q) COMP 2002 or 2902. P) 16 credit points of Intermediate or Senior Computer Science with Distinction average and MATH 1004 or 1904 and 8 credit points of Intermediate Mathematics and/or Statistics and/or Econometrics. N) May not be counted with COMP 3001 *NB: Change to semester availability subject to Faculty approval.*	*July*
COMP 3002	Artificial Intelligence	4	Q) COMP 2004 or 2904. P) COMP 2003 or 2903 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. N) May not be counted with COMP 3902	*February*
COMP 3902	Artificial Intelligence (Advanced)	4	Q) COMP 2004 or 2904. P) 16 credit points of Intermediate or Senior Computer Science with Distinction average and 8 credit points of Intermediate MATH and/or Statistics and/or Econometrics. N) May not be counted with COMP 3002	*February*
COMP 3003	Computer Architecture	4	Q) COMP 2001 or 2901. P) COMP 2002 or 2902 and 2003 or 2903. N) May not be counted with COMP 3903 *NB: Not offered in 2000.*	*July*
COMP 3903	Computer Architecture (Advanced)	4	Q) COMP 2001 or 2901. P) 16 credit points of Intermediate or Senior Computer Science with Distinction average and COMP 2002 or 2902 and 2003 or 2903. N) May not be counted with COMP 3003 *NB: Not offered in 2000.*	*July*
COMP 3004	Computer Graphics	4	Q) COMP 2004 or 2904. P) COMP 2002 or 2902 and MATH 1002 or 1902 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. N) May not be counted with COMP 3904	*July*
COMP 3904	Computer Graphics (Advanced)	4	Q) COMP 2004 or 2904. P) 16 credit points of Intermediate or Senior Computer Science with Distinction average and COMP 2002 or 2902 and MATH 1002 or 1902 and 8 credit points of Intermediate Mathematics and/or Statistics and/or Econometrics. N) May not be counted with COMP 3004	*July*
COMP 3006	Declarative Programming Languages	4	Q) COMP 2004 or 2904. P) 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. N) May not be counted with COMP 3906	*February*

Table 1: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
COMP 3906	Declarative Programming Languages (Advanced)	4	Q) COMP 2004 or 2904. P) 16 credit points of Intermediate or Senior Computer Science with Distinction average and 8 credit points of Intermediate Mathematics and/or Statistics and/or Econometrics. N) May not be counted with COMP 3006	*Februaiy*
COMP 3007	Networked Systems	4	Q) COMP 2004 or 2904. P) COMP 2001 or 2901 or ELEC 2601. N) May not be counted with COMP 3907	*Februaiy*
COMP 3907	Networked Systems (Advanced)	4	Q) COMP 2004 or 2904. P) 16 credit points of Intermediate or Senior Computer Science with Distinction average and COMP 2001 or 2901 or ELEC 2601. N) May not be counted with COMP 3007	*Februaiy*
COMP 3008	Object-Oriented Systems	4	Q) COMP 2004 or 2904. N) May not be counted with COMP3908	*February*
COMP 3908	Object-Oriented Systems (Advanced)	4	Q) COMP 2004 or 2904. P) 16 points of Intermediate or Senior Computer Science with Distinction average. N) May not be counted with COMP 3008	*Februaiy*
COMP 3009	Operating Systems	4	Q) COMP 2004 or 2904. P) COMP 2001 or 2901 or ELEC 2601. N) May not be counted with COMP 3909	*Februaiy*
COMP 3909	Operating Systems (Advanced)	4	Q) COMP 2004 or 2904. P) 16 points of Intermediate or Senior Computer Science with Distinction average and COMP 2001 or 2901 or ELEC 2601. N) May not be counted with COMP 3009	*Februaiy*
COMP 3100	Software Engineering	4	P) COMP 2004 or 2904. N) May not be counted with COMP 3800 *NB: Change to semester availability subject to Faculty approval.*	*July*
COMP 3800	Software Engineering (Advanced)	4	Q) COMP 2004 or 2904. P) 16 points of Intermediate or Senior Computer Science with Distinction average. N) May not be counted with COMP 3100 *NB: Change to semester availability subject to Faculty approval.*	*July*
COMP 3102	User Interfaces Design and Programming	4	Q) COMP 2004 or 2904. N) May not be counted with COMP 3802	*July*
COMP 3802	User Interfaces (Advanced)	4	Q) COMP 2004 or 2904. P) 16 points of Intermediate or Senior Computer Science with Distinction average. N) May not be counted with COMP 3102	*July*
COMP 3201	Algorithmic Systems Project	4	C) COMP 3001 or 3901. *NB: Changes to semester availability, prerequisites and corequisites subject to Faculty approval.*	*July*
COMP 3202	Computer Systems Project	4	P) COMP 3009 or 3909. C) Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204 or 3205, 3206 or 3809.	*Februaiy, July*
COMP 3203	Artificial Intelligence Project	4	C) COMP 3002 or 3902. *NB: Changes to unit name, semester availability, prerequisites and corequisites subject to Faculty approval.*	*Februaiy*
COMP 3204	Software Engineering Project	4	C) COMP 3100 or 3800. *NB: Changes to unit of study title, description, semester availability, prerequisites and corequisites subject to Faculty approval.*	*July*
COMP 3205	Product Development Project	4	P) COMP 3008. C) Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204 or 3205, 3206 or 3809.	*Februaiy, July*
COMP 3206	Bioinformatics Project	4	Q) COMP 2004 or 2904. P) 8 credit points of Senior Computer Science (including COMP 3008/3100/3908/3800) and 16 credit points of Intermediate Biology, Biochemistry and/or Pharmacology.	*July*

Table 1: Bachelor of Science -- continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
COMP 3809	Software Project (Advanced]i	4	P) 16 credit points of Intermediate or Senior Computer Science, with Distinction average. C) 8 credit points of Senior Computer Science.	*February, July*
INFO 3005	Organisational Database Systems	8	Q) INFO 2005 or COMP 2005. N) May not be counted with INFO 3905 or COMP 3005 or COMP 3905	*February*
INFO 3905	Organisational Database Systems (Adv)	4	Q) INFO 2005 or COMP 2005. P) 16 credit points of Intermediate or Senior Computer Science units of study with Distinction average. N) May not be counted with COMP 3005 or COMP 3905 or INFO 3005	*February*

Geography

GEOG 3001	Coastal Environments and Dynamics	12	P) GEOG 2001 or 2002 or 2101 or MARS 2002.	*February*
GEOG 3002	Environmental Geomorphology	12	P) GEOG 2001 or 2002 or 2101.	*July*
GEOG 3101	Catchment Management	12	P) GEOG 2001 or 2002 or 2101 and GEOG 2102 or 2201 or 2202.	*Febniary*
GEOG 3102	Coastal Management and GIS	12	P) GEOG 2001 or 2002 or 2101 or MARS 2002.	*July*
GEOG 3201	Asia-Pacific Development	12	P) GEOG 2101 or 2102 or 2201 or 2202.	*February*
GEOG 3202	Australia in its Global Context	12	P) GEOG 2102 or 2201 or 2202.	*July*

Geology and Geophysics

GEOL 3001	Petrology, Basins and Structure	12	P) GEOL 2001 and 2002.	*February*
GEOL 3002	Stratigraphy, Resources and Australian Geology	8	P) GEOL 3001.	*July*
GEOL 3003	Mineral Exploration	8	C) GEOL 3001.	*February*
GEOL 3004	Paleobiology	4	P) GEOL 2003 or 8 credit points of Intermediate Biology.	*February*
GEOL 3005	Geochemistry and Structure	12	P) GEOL 3001.	*July*
GEOL 3006	Petroleum Exploration	4	P) GEOL 3001.	*July*
GEOP 3001	Geophysical Signal Processing	4	P) 16 credit points of Intermediate Science units of study.	*July*
GEOP 3002	Geodynamics	4	P) 16 credit points of Intermediate Science units of study.	*February*
GEOP 3003	Geophysical Exploration A	4	P) 16 credit points of Intermediate Science units of study.	*February*
GEOP 3004	Petroleum Geophysics & Basin Analysis	4	P) 16 credit points of Intermediate Science units of study.	*February*
GEOP 3005	Environmental Geophysics	4	P) 16 credit points of Intermediate Science units of study.	*July*
GEOP 3006	Geophysical Exploration B	4	P) GEOP 3003.	*July*

History and Philosophy of Science

HPSC 3001	History of Physical Sciences	6	Q) HPSC 2001 and 2002. *NB: Other information: Candidates taking this unit of study must complete at least 24 credit points at Senior level in another Science Discipline Area in order to satisfy the requirements for the BSc degree.*	*February*
HPSC 3002	History of Biological Sciences	6	Q) HPSC 2001 and 2002. *NB: Other information: As for HPSC 3001.*	*July*

Table 1: Bachelor of Science -- continued

(a) Unit of Study	(b)	(c) Credit Points	(dV(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
HPSC 3003	Social Relations of Science A	4	Q) HPSC 2001 and 2002. *NB: Other information: As for HPSC 3001.*	*February*
HPSC 3004	Social Relations of Science B	4	Q) HPSC 2001 and 2002. P) HPSC 3003. *NB: Other information: As for HPSC 3001.*	*July*
HPSC 3005	History and Philosophy of Medical Science	4	Q) HPSC 2001 and 2002. *NB: Other information: As for HPSC 3001.*	*February*
HPSC 3006	Scientific Controversies	4	Q) HPSC 2001 and 2002. *NB: Other information: As for HPSC 3001.*	*July*
HPSC 3007	Science and Ethics	4	Q) HPSC 2001 and 2002. *NB: Other information: As for HPSC 3001.*	*February*
HPSC 3008	The Nature of Experiment	4	Q) HPSC 2001 and 2002. *NB: Other information: As for HPSC 3001.*	*July*
HPSC 3100	Contemporary Issues A	4	Q) HPSC 2001 and 2002. *NB: Other information: As for HPSC 3001.*	*February*
HPSC 3101	Contemporary Issues B	4	Q) HPSC 2001 and 2002. *NB: Other information: As for HPSC 3001.*	*July*
HPSC 3103	Philosophy of the Biological Sciences	4	P) HPSC 2001 and 2002.	*July*

Information Systems

ISYS 3000	Management of Information Systems	4	Q) INFO 2000 or COMP 2000.	*July*
ISYS 3011	Information Systems Methodologies	4	Q) INFO 2000 and INFO 2005. *NB: Not offered in 2000.*	*February*
ISYS 3012	Project Management and Practice	4	Q) INFO 2000. *NB: Not offered in 2000.*	*February*
ISYS 3015	Information Systems Research Methods	4	Q) ENGL 1050 or equivalent or ARIN 1000 and 24 credit points of Intermediate units of study including 8 credit points from INFO or ISYS units of study.	*February*
ISYS 3207	Information Systems Project	8	Q) ISYS 3015. P) INFO 3005 or ISYS 3000 or ISYS 3012.	*July*
INFO 3005	Organisational Database Systems	8	Q) INFO 2005 or COMP 2005. N) May not be counted with INFO 3905 or COMP 3005 or COMP 3905	*February*
INFO 3905	Organisational Database Systems (Adv)	4	Q) INFO 2005 or COMP 2005. P) 16 credit points of Intermediate or Senior Computer Science units of study with Distinction average. N) May not be counted with COMP 3005 or COMP 3905 or INFO 3005	*February*

Marine Sciences

MARS 3001	Marine Science A	12	P) MARS 2002. There are prerequisites for some options, see options entries.	*February*
MARS 3002	Marine Science B	12	P) MARS 2002. There are prerequisites for some options, see option entries.	*July*

Mathematics

MATH 3001	Topology	4	P) 8 credit points of Intermediate Mathematics. N) May not be counted with MATH 3901	*February*
MATH 3002	Rings and Fields	4	P) 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2008 or 2908). N) May not be counted with MATH 3902	*February*
MATH 3003	Ordinary Differential Equations	4	P) 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2001 or 2901).	*February*
MATH 3004	History of Mathematical Ideas	4	P) 8 credit points of Intermediate Mathematics.	*February*

Table 1: Bachelor of Science -- continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
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.	*February*
MATH 3006	Geometry	4	P) 8 units of Intermediate Mathematics (strongly advise MATH 1902 or 1002).	*July*
MATH 3007	Coding Theory	4	P) 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902).	*July*
MATH 3008	Real Variables	4	P) 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2007 or 2901 or 2907).	*July*
MATH 3009	Number Theory	4	P) 8 credit points of Intermediate Mathematics.	*July*
MATH 3010	Information Theory	4	P) 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901 and some probability theory).	*July*
MATH 3015	Financial Mathematics 2	4	P) 8 credit points of Intermediate Mathematics (strongly advise MATH 2033 or 2933 or 2010 and some probability theory). N) May not be counted with MATH 3933.	*July*
MATH 3016	Mathematical Computing I	4	P) 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903. N) May not be counted with MATH 3916.	*February*
MATH 3018	Partial Differential Equations and Waves	4	P) MATH (2001 or 2901) and MATH (2005 or 2905).	*July*
MATH 3019	Signal Processing	4	P) MATH (2001 or 2901) and MATH (2005 or 2905).	*February*
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.	*July*
MATH 3901	Metric Spaces (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 2907). N) May not be counted with MATH 3001	*February*
MATH 3902	Algebra I (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 2902). N) May not be counted with MATH 3002	*February*
MATH 3903	Differential Geometry (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901, with MATH 3001 or 3901).	*February*
MATH 3904	Complex Variable (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901, with MATH 3001 or 3901).	*February*
MATH 3905	Categories and Computer Science (Advanced)	4	P) 12 credit points of Intermediate Mathematics.	*Februaiy*
MATH 3906	Group Representation Theory (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 3902).	*July*
MATH 3907	Algebra H (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 3002 or 3902).	*July*
MATH 3908	Nonlinear Analysis (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 3901).	*July*
MATH 3909	Lebesgue Integration and Fourier Analysis (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 2907 and MATH 3901).	*July*
MATH 3911	Differential Analysis (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 2901 and 3902).	*July*
MATH 3912	Combinatorics (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 2902).	*July*
MATH 3913	Computational Algebra (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 3002 or 3902).	*July*
MATH 3914	Fluid Dynamics (Advanced)	4	P) MATH (2901 or credit in 2001) and MATH (2905 or credit in 2005).	*February*
MATH 3915	Mathematical Methods (Advanced)	4	P) MATH (2901 or credit in 2001) and MATH (2905 or credit in 2005).	*Februaiy*

BSc Table

Table 1: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	ffl Offered
MATH 3916	Mathematical Computing I (Advanced)	4	P) 8 units of Intermediate Mathematics and one of MATH 1903 or Credit in MATH 1003. N) May not be counted with MATH 3016	February
MATH 3917	Hamiltonian Dynamics (Advanced)	4	P) MATH 2904 or Credit in MATH 2004.	July
MATH 3918	Mathematical Computing II (Advanced)	4	P) MATH 3016 or Engineering Mathematics 2052.	July
MATH 3919	Signal Processing (Advanced)	4	P) MATH 2905 or Credit in MATH 2005. N) May not be counted with MATH 3019	February
MATH 3920	Nonlinear Systems and Biomathematics (Advanced)	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 1003 and 1004. N) May not be counted with MATH 3020	July
MATH 3933	Financial Mathematics 2 (Advanced)	4	P) 8 credit points of Intermediate Mathematics (strongly advise MATH 2933 or Credit in 2033 and MATH 2010 and some probability theory). N) May not be counted with MATH 3015.	July

Microbiology

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e)	ffl Offered
MICR 3001	General and Medical Microbiology	12	Q) MICR 2002 or 2902 or both MICR 2001 and 2004 or both MICR 2004 and 2901. P) BCHM (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). N) May not be counted with MICR 3901	Februaiy
MICR 3002	Molecular and Environmental Microbiology	12	Q) MICR 2002 or 2902 or both MICR 2001 and 2004 or both MICR 2004 and 2901. P) BCHM (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). N) May not be counted with MICR 3902	July
MICR 3901	General and Medical Microbiology (Advanced)	12	Q) MICR (2002 or 2902) or (MICR 2001 and 2004) or MICR (2004 and 2901). (Credit or better is required in MICR 2001 or 2002 or 2004 or the equivalent components of MICR 2901 or 2902.). P) BCHM (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). N) May not be counted with MICR 3001.	February
MICR 3902	Molecular and Environmental Microbiology (Advanced)	12	Q) MICR (2002 or 2902) or MICR (2001 and 2004) or MICR (2004 and 2901). (Credit or better is required in MICR 2001 or 2002 or 2004 or the equivalent components of MICR 2901 or 2902). P) BCHM (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). N) May not be counted with MICR 3002.	July

Pharmacology

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e)	ffl Offered
PCOL 3001	Molecular Pharmacology and Toxicology	12	P) PCOL 2001 and 2002. Students are strongly advised to consider Intermediate units of study in Biochemistry and/or Chemistry together with PHSI2001 and 2002 if they wish to undertake PCOL 3001.	Februaiy
PCOL 3002	Neuro- and Cardiovascular Pharmacology	12	P) PCOL 2001 and 2002. Students are strongly advised to consider Intermediate units of study in Biochemistry and/or Chemistry together with PHSI 2001 and 2002 if they wish to undertake PCOL 3002.	July
PCOL 3901	Molecular Pharmacology and Toxicology (Advanced)	12	P) PCOL 2001 and 2002. Students are strongly advised to consider Intermediate units of study in Biochemistry and/or Chemistry together with PHSI 2001 and 2002 if they wish to undertake PCOL 3801. N) May not be counted with PCOL 3001.	February
PCOL 3902	Neuro- and Cardiovascular Pharmacology (Advanced)	12	P) PCOL 2001 and 2002. Students are strongly advised to consider Intermediate units of study in Biochemistry and/or Chemistry together with PHSI 2001 and 2002 if they wish to undertake PCOL 3902. N) May not be counted with PCOL 3002.	July

Physics

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e)	ffl Offered
PHYS 3003	Quantum Mechanics and Relativity	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3903 or 3200	February
PHYS 5004	Condensed Matter Physics and Photonics	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3904	Februaiy

Table 1: Bachelor of Science -   continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(0 Offered
PHYS 3005	Topics in Modern Physics A	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3905	*July*
PHYS 3006	Topics in Modern Physics B	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3906	*July*
PHYS 3007	Fourier Methods in Physics	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3907	*Februaiy*
PHYS 3008	Experimental Physics A	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3908 or 3009 or 3909	*February*
PHYS 3009	Experimental Physics B	8	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3008 or 3908 or 3909	*Februaiy*
PHYS 3101	Experimental Physics C	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3102 or 3801 or 3802	*July*
PHYS 3102	Experimental Physics D	8	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3101 or 3801 or 3802	*July*
PHYS 3103	Special Project A	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3104 or 3803 or 3804. *NB: Approval for this unit must be obtained from the Lecturer in charge of Senior Physics.*	*Februaiy*
PHYS 3104	Special Project B	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3103 or 3803 or 3804	*July*
PHYS 3301	Scientific Computing	4	P) 16 credit points of Intermediate units of study in Chemistry, Computer Science, Mathematics, Physics or Statistics.	*Februaiy*
PHYS 3303	Scientific Visualisation	4	P) PHYS 3301.	*July*
PHYS 3801	Experimental Physics C (Advanced)	4	Q) PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. P) 16 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3101 or 3102 or 3802	*July*
PHYS 3802	Experimental Physics D (Advanced)	8	Q) PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. P) 16 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3101 or 3102 or 3801	*July*
PHYS 3803	Special Project A (Advanced)	4	Q) PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. P) 16 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3103 or 3104 or 3804. *NB: Approval for this unit must be obtained from the Lecturer in charge of Senior Physics.*	*February*
PHYS 3804	Special Project B (Advanced)	4	Q) PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. P) 16 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3103 or 3104 or 3803	*July*
PHYS 3903	Quantum Mechanics and Relativity (Advanced)	4	Q) PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. P) 16 credit points of Intermediate Mathematics. N) May not be counted withPHYS 3003 or 3200.	*Februaiy*

BSc

Table

Table 1: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	ffl Offered
PHYS 3904	Condensed Matter Physics and Photonics (Advanced)	4	Q) PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. P) 16 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3004.	*February*
PHYS 3905	Topics in Modern Physics A (Advanced)	4	Q) PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. P) 16 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3005.	*July*
PHYS 3906	Topics in Modern Physics B (Advanced)	4	Q) PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. P) 16 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3006.	*July*
PHYS 3907	Fourier Methods in Physics (Advanced)	4	Q) PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. P) 16 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3007	*February*
PHYS 3908	Experimental Physics A (Advanced)	4	Q) PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. P) 16 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3008 or 3009 or 3909	*February*
PHYS 3909	Experimental Physics B (Advanced)	8	Q) PHYS 2901 and 2902, or Credit or better in PPHYS or 2101 and Credit or better in PHYS 2002 or 2102. P) 16 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3008 or 3009 or 3908	*February*
PHYS 3105	Astrophysics	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics.	*July*
PHYS 3106	Plasma Physics	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics.	*July*
PHYS 3107	Modern Optics	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics.	*July*
PHYS 3108	Nuclear and Particle Physics	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics.	*July*
PHYS 3109	Acoustics and Ultrasonics	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics.	*July*
PHYS 3200	Quantum Physics	4	Q) 16 credit points of Intermediate Physics. P) 8 credit points of Intermediate Mathematics. N) May not be counted with PHYS 3003 or 3903	*February*

Physiology

PHSI 3001	Neuroscience	12	Q) PHSI 2101 or PHSI 2001 orANAT2003 orBMED2101 and 2102. P) BCHM (2001 or 2101 or 2901) and (2002 or 2102 or 2901) plus 8 or more credit points from any Intermediate units of study in Anatomy and Histology, Biology, Chemistry, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology or Statistics. Students in the Faculty of Engineering who have completed Physiology 2001 and 2002 plus at least one other Intermediate unit of study similar to the prerequisites may also be permitted to enrol. *NB: A minimum of 8 credit points of Intermediate Physiology is recommended.*	*February*
PHSI 3901	Neuroscience (Advanced)	12	Q) PHSI 2101 or PHSI 2001 or ANAT 2003 or BMED 2101 and 2102. P) BCHM (2001 or 2101 or 2901) and (2002 or 2102 or 2901) plus 8 or more credit points from any Intermediate units of study in Anatomy and Histology, Biology, Chemistry, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology or Statistics. *NB: A minimum of 8 credit points of Intermediate Physiology is recommended.* *Available to selected students only.*	*February*

Table 1: Bachelor of Science -- continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
PHSI 3002	Neuroscience - Cellular and Integrative	12	P) BCHM (2001 and 2002) or (2101 and 2102) and an additional 8 or more credit points from any Intermediate unit/s of study in the following subjects: Anatomy and Histology, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology, or Statistics. Students in the Faculty of Engineering who have completed Physiology 2001 and 2002 plus at least one other Intermediate unit of study similar to the prerequisites may also be permitted to enrol.	*July*
PHSI 3902	Neuroscience - Cellular and Integrative (Advanced)	12	P) PHSI 3001. *NB: Available to selected students.*	*July*
PHSI 3003	Heart and Circulation	12	Q) PHSI 2102 or 2002 or BMED 2101 and 2102. P) BCHM (2001 or 2101 or 2901) and (2002 or 2102 or 2902) plus 8 or more credit points from any Intermediate units of study in Anatomy and Histology, Biology, Chemistry, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology or Statistics. Students in the Faculty of Engineering who have completed Physiology 2001 and 2002 plus at least one other Intermediate unit of study similar to the prerequisites may also be permitted to enrol. *NB: A minimum of 8 credit points of Intermediate Physiology is recommended.*	*July*
PHSI 3903	Heart and Circulation (Advanced)	12	Q) PHSI 2102 or 2002 or BMED 2101 and 2102. P) BCHM (2001 or 2101 or 2901) and (2002 or 2102 or 2902) plus 8 or more credit points from any Intermediate units of study in Anatomy and Histology, Biology, Chemistry, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology or Statistics. *NB: A minimum of 8 credit points of Intermediate Physiology is recommended.* *Available to selected students.*	*February*

Psychology

PSYC 3201	Statistics and Psychometrics	4	Q) 12 credit points of Intermediate Psychology including PSYC 2112 (or PSYC 2001 and 2002). *NB: From year 2001 32 credit points of Senior Psychology is required for Honours entry.*	*July*
PSYC 3202	History and Philosophy of Psychology	4	Q) 12 credit points of Intermediate Psychology. *NB: From year 2001 32 credit points of Senior Psychology is required for Honours entry.*	*February*
PSYC 3203	Abnormal Psychology	4	Q) 12 credit points of Intermediate Psychology. *NB: From year 2001 32 credit points of Senior Psychology is required for Honours entry.*	*July*
PSYC 3204	Behavioural Neuroscience	4	Q) 12 creditpoints of Intermediate Psychology including PSYC 2111 and 2112 (or PSYC 2001 and 2002). *NB: From year 2001 32 creditpoints of Senior Psychology is required for Honours entry.*	*July*
PSYC 3205	Cognition and Language	4	Q) 12 credit points of Intermediate Psychology including PSYC 2112 and 2113 (or PSYC 2001 and 2002). *NB: From year 2001 32 creditpoints of Senior Psychology is required for Honours entry.*	*July*
PSYC 3206	Developmental Psychology	4	Q) 12 creditpoints of Intermediate Psychology. *NB: From year 2001 32 creditpoints of Senior Psychology is required for Honours entry.*	*February*
PSYC 3207	Human Performance & Organisational Psychology	4	Q) 12 credit points of Intermediate Psychology including PSYC 2113 (or PSYC 2001 and 2002). *NB: From year 2001 32 creditpoints of Senior Psychology is required for Honours entry.*	*July*
PSYC 3208	Intelligence	4	Q) 12 creditpoints of Intermediate Psychology including PSYC 2112 and 2114 (or PSYC 2001 and 2002). *NB: From year 2001 32 creditpoints of Senior Psychology is required for Honours entry.*	*July*
PSYC 3209	Learning & Motivation	4	Q) 12 credit points of Intermediate Psychology including PSYC 2111 and 2112 (or PSYC 2001 and 2002). *NB: From year 2001 32 creditpoints of Senior Psychology is required for Honours entry.*	*February*

BSc

Table

Table I: Bachelor of Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
PSYC 3210	Perceptual Systems	4	Q) 12 credit points of Intermediate Psychology including PSYC 2111 and 2112 (or PSYC 2001 and 2002). NB: From year 2001 32 credit points of Senior Psychology is required for Honours entry.	*February*
PSYC 3211	Psychological Assessment	4	Q) 12 credit points of Intermediate Psychology including PSYC 2112 and 2114(or PSYC 2001 and 2002). NB: From year 2001 32 credit points of Senior Psychology is required for Honours entry.	*Februaiy*
PSYC 3212	Social Psychology	4	Q) 12 credit points of Intermediate Psychology including PSYC 2113 (or PSYC 2001 and 2002). NB: From year 2001 32 credit points of Senior Psychology is required for Honours entry.	*February*

Soil Science

SOIL 3001	Environmental Soil Science A	12	Q) SOIL 2001.	*February*
SOIL 3002	Environmental Soil Science B	12	Q) SOIL 2001. P) AGCH2001 or CHEM 2001 or2101 or 2202 or 2301 or 2302 orBCHM2002 or 2902.	*July*

Statistics

STAT 3001	Distribution Theory and Inference	4	P) MATH 2001 or 2901 and STAT 2003 or 2903. N) May not be counted with STAT 3901	*February*
STAT 3002	Applied Linear Models	4	P) STAT 2004 and MATH 1002 or 1902 (or STAT 1022 for Arts students). N) May not be counted with STAT 3902	*February*
STAT 3003	Time Series Analysis	4	P) STAT 2003 or 2903.	*February*
STAT 3004	Design of Experiments	4	P) STAT 3002 or 3902.	*July*
STAT 3005	Applied Stochastic Processes	4	P) (STAT 2001 or 2901) and (MATH 2001 or 2901). N) May not be counted with STAT 3905	*July*
STAT 3006	Sampling Theory and Categorical Data	4	P) STAT 2003 or 2903.	*July*
STAT 3901	Statistical Theory (Advanced)	4	P) (MATH 2001 or 2901) and STAT 2903. N) May not be counted with STAT 3001	*February*
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	*February*
STAT 3905	Markov Processes (Advanced)	4	P) STAT 2901 and MATH (2001 or 2901) and MATH (2002 or 2902). N) May not be counted with STAT 3005	*July*
STAT 3907	Multivariate Analysis (Advanced)	4	P) STAT 3902 and either 3001 or 3901.	*Jidy*

Study in other Faculties

A total of 28 credit points of units of study from non-Science discipline areas may be counted towards the BSc degree, including units of study from the Faculties of Arts and Economics. Students should consult the Handbooks for the Faculties of Arts and Economics 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 1021) or Econometrics IA (ECMT 1010) or Econometrics IB (ECMT 1020) 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 IA (ECMT 1010) and/or Econometrics IB (ECMT 1020) but they may not enrol in Mathematics units MATH 1011, 1012, 1013 or 1015.

Bachelor of Science units of study

Department of Agricultural Chemistry and Soil Science
Agricultural Chemistry

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 and the environment. Emphasis is placed on the chemistry of molecules of biological, agricultural and environmental significance both naturally occurring (e.g. in foods and natural fibres), and chemically synthesised (e.g. 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 AGCH 2001 Molecular Processes in Ecosystems (8 credit points Intermediate), AGCH 3001 Chemistry and Biochemistry of Ecosystems and AGCH 3003 Food Chemistry and Biochmistry (12 credit points Senior), and Agricultural Chemistry Honours.

AGCH 2001   Molecular Processes in Ecosystems
8 credit points
Dr Lees, Dr Caldwell (Coordinator)
Qualifying: CHEM 1002 or equivalent. **Prerequisite:** BIOL 1002 or 1902 Students who have not satisfied the prerequisites in Biology may enrol with SOIL 2001 as a corequisite. **Prohibition:** May not be counted with any Intermediate unit of study in Biochemistry. **Offered:** February. **Classes:** 3 lec & 5 prac/wk. **Assessment:** One 3hr exam, prac, assignments.

This is an introductory unit of study consisting of aspects of chemistry and biochemistry relevant in studies of basic and applied biological sciences including agriculture and the environment. The unit of study introduces students to biophysical, biological and environmental chemistry. Lecture topics include: energy in the biosphere; the interaction of radiation and matter; solutions of neutral solutes and electrolytes; emulsions, foams and gels; the biological chemistry of carbohydrates, lipids, amino acids and proteins (including enzymes); nucleic acids; the metabolism of simple sugars, fatty acids and amino acids; the mechanisms of energy release and transduction; the basic pathway of carbon fixation in photosynthesis. Emphasis is given to the theory, principles and practice of the basic analytical techniques which underpin the more advanced instrumental methods used in many laboratory based disciplines.
Practical: Seven laboratory sessions cover aspects of analytical and biophysical chemistry including: elemental analysis of foods, spectrophotometry, chromatographic techniques, preparation of buffers, fundamentals of pH measurement; emulsions, foams and gels. An additional five laboratory sessions are concerned with the properties of carbohydrates, lipids, amino acids, proteins and nucleic acids. Laboratory classes include instruction in the safe handling of chemicals and safe practices in chemical laboratories.

AGCH 3001   Chemistry and Biochemistry of Ecosystems
12 credit points
Prof. Kennedy (Coordinator), Dr Caldwell, Dr Lees, Assoc. Prof. Copeland
Prerequisite: AGCH 2001 or CHEM 2001 or 2101 or 2202 or 2301 or 2302 or 2902 or BCHM 2002 or 2092 or ENVI 2001 and 2002.
Offered: July. **Classes:** 3 lec, 1 tut & 8hr of prac work/week.
Assessment: One 3hr exam, prac, assignments.
This is a unit of study in environmental chemistry is for students with interests in environmental science and should prove attractive to students seeking a career in environmental protection in the public or private sectors. The specific objectives of the unit of study are to (i) provide students with an understanding of chemical and biochemical processes in ecosystems, in particu-

lar the various elemental cycles, inclusive of environmental impacts arising from disturbances in natural processes and contamination from other human activity and (ii) teach students practical skills in chemical and biochemical methods of analysis used in environmental chemistry.

The lecture topics will include: bioenergetics of autotrophy and heterotrophy, the biological/environmental carbon cycle, photosynthesis, fermentation, eutrophication; the mineral nutrient cycles, uptake and utilisation by organisms, pH balancing; the biological/environmental nitrogen cycle; ammonification, nitrification of ammonia, denitrification of nitrate, nitrogen fixation, ammonia and nitrate assimilation; the biological/environmental sulfur cycle; sulfate assimilation, sulfate reduction and dissimilation in soil and water; the role of the nitrogen and sulfur cycles in the acidification of ecosystems; effects of acidification on plants and animals; pesticides and herbicides, chemistry, modes of action, metabolism and detoxification; environmental chemistry and fate of pesticides; design of new pesticides and means of pest control; heavy metals and plants, mechanisms of tolerance, hyperaccumulators, halophytes.
Practical: The laboratory exercises will include sample preparation and analyses of environmental samples for organic and inorganic nutrients, products and contaminants including heavy metals and pesticides. Skills will be acquired in gas, liquid and ion chromatography, atomic absorption spectrometry, electrochemical methods, mass spectrometry and the use of immunoassays (ELISA). Students will also carry out a practical project equivalent to 4 credit points which will include a literature search and a practical exercise on a topic selected in consultation with the coordinator, and with consideration given to their overall program of study.
Reference books
Manahan SE. Environmental Chemistry. 5th edn, Lewis Publisher, 1991
Kennedy *JR*. Acid Soil and Acid Rain. 2nd edn, Wiley Research Studies Press, 1992

AGCH 3003   Food Chemistry and Biochemistry
12 credit points
Assoc. Prof. Copeland (Coordinator), Dr Lees, Dr Caldwell
Prerequisite: AGCH 2001 or BCHM 2002 or 2902. **Offered:** February. **Classes:** 3 lec, 1 tut & 8hr prac/wk. **Assessment:** One 3hr exam, prac, assignments.
This unit of study aims to:
(i) give students an understanding of the constituents of foods and fibres and
(ii) teach students practical skills in chemical and biochemical methods of analysis used in laboratories of enterprises concerned with the processing of agricultural products, and in the food and beverage industries.

The lecture topics cover: properties, behaviour and metabolism of the major constituents of food systems; carbohydrates, sucrose and other oligosaccharides, starch and non-starchy polysaccharides; fatty acid and lipids; proteins; toxic and anti-nutritional constituents of foods. Characteristics of cereal and legume grains in relation to quality and end use of products; solution properties of biological macromolecules, natural fibrous and gel-forming macromolecules, uses in foods and other commercial produts; chemistry of doughs and breadmaking; chemistry of fermentation processes in food industries.
Practical: The laboratory exercises will include sample preparation and analyses of foods and other biological materials using spectroscopic, enzymic, and chromatographic (including GC and HPLC) and electophoretic methods. Students also undertake a short analytical project, which takes into account their interests and the objectives of the unit of study.

Agricultural Chemistry Honours
Offered: February.
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 offered by the Department of Agricultural Chemistry and Soil Science 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 2001   Soil Properties and Processes
8 credit points
Dr Cattle
Prerequisite: CHEM 1002 or equivalent and 12 credit points of Junior Mathematics or PHSY 1003 or 1004. **Offered:** February. **Classes:** 3 lec, 1 tut, 3hr prac/wk; and 2 days of fieldwork. **Assessment:** One 3hr exam, coursework, and prac report.
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 New South Wales are studied in relation to their formation, properties and classification.
Textbooks
White RE. Priciples and Practice of Soil Science: The Soil as a Natural Resource. Blackwell Science, 1997

SOIL 2002   Soil Resources and Conservation
8 credit points
Dr Singh
Prerequisite: SOIL 2001 or GEOL 1002 or GEOL 2004 or GEOG 1001 or ENVI 2001. **Prohibition:** May not be counted with GEOG 3002. **Offered:** July. **Classes:** 4 lec & 3hr prac/wk; 5 days in the field in the week prior to the commencement of the July Semester. **Assessment:** One 3hr exam, reports on field and lab work.
Lectures on classification of soil, soil survey, pedological processes, geomorphology and soil stratigraphy, aerial photography, geostatistics and their application to land evaluation for rural purposes, the forms of land degradation occurring in Australia, the management of the soil environment and processes and management conducive to sustainable soil husbandry. Five days' field work in the last week of the mid-year break will take place at a country location and involves landscape description and the description, mapping and sampling of soil profiles for the purpose of assessing land-use capability and field variability of soil properties. The field-work component is a compulsory part of the unit of study.

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

SOIL 3001   Environmental Soil Science A
12 credit points
Prof. McBratney (Coordinator), Dr Cattle
Qualifying: SOIL 2001. **Offered:** February. **Classes:** 3 lec, 1 tut & 6hr prac)/wk, 10 days in the field. **Assessment:** Two 2hr exams, field and prac reports, problem sets, essay.
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.
Reference books
FitzPatxick EA. Soils. Longman, 1980
FitzPatrick EA. Micromorphology of Soils. Chapman & Hall, 1984
Isbell RE. 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
Soil Survey Staff Soil Taxonomy: A Basic System of Soil Classification for Making and Interpreting Soil Surveys Agric. Handbook No. 436. U.S. Department Agric, Washington D.C., 1975

SOIL 3002   Environmental Soil Science B
12 credit points
Dr Singh
Qualifying: SOIL 2001. **Prerequisite:** AGCH 2001 or CHEM 2001 or 2101 or 2202 or 2301 or 2302 or BCHM 2002 or 2902. **Offered:** July. **Classes:** 3 lec, 1 tut & 8hr prac/wk. **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: Topics include clay mineralogy, cation exchange capacity and pH dependent charge, soil charge characteristics, soil chemical analyses and their interpretation, formation of acid soil - Al and Mn toxicities, chemistry and adsorption/desorption of K, P and S in soil, soil solution and speciation of ionic components, oxidation/reduction reactions in soil and chemistry of soil organic matter and nitrogen.

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.

Reference books

Barber SA. Soil Nutrient Bioavailability. Wiley, 1984
Dixon JB, & Weed SB (eds). Minerals in Soil Environments. 1989
Fitzpatrick EA. Soils. Longman: London, 1980
Lindsay WL. Chemical Equilibria in Soils. 1979
Loveday J (ed.). Methods for Analysis of Irrigated Soils. CAB, 1974
McBride MB. Environmental Chemistry of Soils. 1994
Sparks DL. Environmental Soil Chemistry. 1995
Sposito G. The Chemistry of Soils. Oxford, 1989

Soil Science Honours

This unit if study consists of several parts:
   (i) Supplementary lectures and seminars.
   (ii) Unit if 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.
   (iv) A project in one branch of soil science.

Department of Anatomy and Histology

The Department teaches anatomy, histology and embryology 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 ground floor, Room 219.

Noticeboards

The noticeboards are situated next to the Department Office, Room 219, and near Rooms 223 and 331. Students are advised to consult the noticeboards 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.

ANAT2001   Principles of Histology
4 credit points
Dr Byrne
Prerequisite: 12 credit points of Junior Biology or Junior Psychology. **Offered:** February. **Classes:** 4hr/wk, usually 2 lec & 2 prac. **Assessment:** One 1hr exam, one 1hr prac exam, one 2000w essay.

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. Instruction will also focus on practical applications of histological techniques and analysis for research.

Textbooks

Ross MH, Romrell LJ, & Kaye G I. Histology: A Text and Atlas. (3rd edn), Williams & Wilkins, 1995
Histology Practical Book (consult Departmental noticeboards)

Reference Books

Gilbert SF. Developmental Biology. (5th edn), Sinauer, 1997
Alberts B et al. Molecular Biology of the Cell. Garland: N.Y.,1994
The histology text and practical book are to be purchased before the first practical class

ANAT 2002   Comparative Primate Anatomy
4 credit points
Dr Donlon
Prerequisite: 12 credit points of Junior Biology or Junior Psychology. **Offered:** July. **Classes:** 4hr/wk, usually 2 lec & 2 prac/tut. **Assessment:** One 1 hr theory exam (40%), one 1 hr prac exam (40%), one 2000w essay (20%).

This unit of study 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 hand in manipulation and locomotion, bipedalism, climbing and brachiation in apes, and the changes in pelvic anatomy associated with bipedalism and their obstetric consequences.

Textbooks

Aiello L, & Dean C. An Introduction to Human Evolutionary Anatomy. Academic Press, 1990
Zihlman AL. The Human Evolution Colouring Book. Barnes & Noble Books: Sydney, 1982

ANAT 2003   Concepts in Neuroanatomy
4 credit points
Prerequisite: BIOL (1001 or 1901) and BIOL (1002 or 1902 or BIOL 1003 or 1903) OR PSYC 1001 and PSYC 1002. Assumed knowledge: Background in basic mammalian biology. Offered: July. Classes: 2hrs lec & 2hr prac or library project/wk. Assessment: One 1.5hr theory exam; one 1-hr prac exam; one essay/assignment.

This unit of study introduces students to the structural organization of the central nervous system, exploring the anatomy, histology, chemical architecture and aspects of developmental biology of the mammalian brain and spinal cord. Some comparison is made with invertebrate species. Study of the microscopic structure of constituent cells, identified by their expression of characteristic molecules, and their regional differences is the central theme of the course. In addition, students are introduced to the structural and neurochemical specializations of neurons and their micro-environment. Other topics considered include the evolution, development and aging of the primate brain. This unit of study will be of general interest to students studying science and related disciplines, and will prepare students for neuroscience study at higher levels.

Textbooks

The Human Brain: An Introduction to its Functional Anatomy. J. Nolte. 4th Ed, C.V. Mosby, 1998

BSc

Units of study

Soil Science
Anatomy &
Histology

ANAT 2004   Principles of Development
4 credit points
Ms R. Arnold
Qualifying: ANAT 2001. **Offered:** July. **Classes:** 2hrs lec & 2hrs prac/wk. **Assessment:** One 1 hr theory exam, one 1hr prac exam, one 1200 word essay.

This unit of study covers the normal early development of whole embryos along with the later development of selected organ systems. The unit is based on human and pig development but other vertebrate species are considered as well. Emphasis is placed on mechanisms guiding development and on the experimental methods used to elucidate these mechanisms. The unit of study also includes an introduction to teratology and a few of the more common or interesting anomalies of development.

ANAT 3001   Microscopy and Histochemistry
12 credit points
Assoc. Prof. Murphy, Ms R. Arnold
Qualifying: ANAT 2001. **Offered:** February. **Classes:** 4hr lec & 8hr lab/wk. **Assessment:** 5hr theory exam, 2hr prac exam practical reports and/or essays.

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. (2nd edn), Pergamon, 1990

ANAT 3002   Cells and Development
12 credit points
Dr McAvoy
Qualifying: ANAT 2001**. Prerequisite:** At least 8 credit points of Intermediate Biochemistry. **Assumed knowledge:** (i) an understanding of the basic structure of the vertebrates; (ii) an understanding of elementary biochemistry and genetics. **Prohibition:** May not be counted with ANAT 3003. **Offered:** July. **Classes:** 12hr/wk. **Assessment:** Theory exam and practical assignments.

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. (5th edn) Sinauer Associates Inc: Sunderland, Mass. 1997

ANAT 3003   Transmission and Scanning Electron Microscopy
12 credit points
Ms Arnold
Qualifying: ANAT 2001. Prohibition: May not be counted with ANAT 3002. Offered: July. Classes: 4hr lec & 8hr lab/wk. Assessment: Exam, prac reports and/or project and/or essay.

This unit of study covers the theoretical basis of resolution, electron optics, image formation, vacuum systems and instrument design as applied to TEM and SEM. It includes the theory and practice of specimen preparation, the sectioning of plastic blocks for light microscopy as well as TEM, the operation of the instruments and the application of TEM and SEM to morphometry. The unit of study also covers special methods in electron microscopy such as environmental SEM, scanning transmission electron microscopy (STEM), ultrastructural cytochemistry, cryo-ultramicrotomy and electron diffraction.

Textbooks

Bozzola JJ, & Russell LD. Electron Microscopy. Jones & Bartlett, 1992

Reference books

Royal Microscopical Society Microscopy Handbooks Numbers 03,08,11,17,20,21

ANAT 3004   Cranial and Cervical Anatomy
6 credit points
Dr Provis
Qualifying: ANAT 2002. **Offered:** July. **Classes:** 1 lec, 2hr dissection, 3hr prac/tut. **Assessment:** One 1.5hr theory exam, one 1hr prac exam, one 2500 word essay, continuous assessment (10%).

This unit of study focuses on the peripheral distribution of the cranial nerves in the head and neck regions of the body. Emphasis is placed on the functional components of the cranial nerves and their relationship to the special senses and special motor functions such as facial gesture and speech. 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

Berkovitz & Moxham. A Textbook of Head and Neck Anatomy.

Wolfe Publishing, 1988

McMinn & Hutchings. A Colour Atlas of Human Anatomy. Wolfe Medical Publications: London

or

Rohen & Yokochi. Colour Atlas of Anatomy. Dcagu-Shoin

ANAT 3006   Forensic Osteology
6 credit points
Dr Donlon
Prerequisite: ANAT 2002. Offered: February. Classes: 2 lec, 2hrtut & 2hr prac/week. Assessment: Exam, literature review, case study.
NB: A quota of 15 exists for this unit of study.

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. (A quota of 15 exists for this unit of study.)

Textbooks

Bass WM. Human Osteology: A laboratory and field manual. 3rd edition. Missouri Archaeological Society: Missouri, 1995

ANAT 3007   Visceral Anatomy
6 credit points
Ms R. Arnold
Qualifying: ANAT 2002 or ANAT 2003. **Assumed knowledge:** Some knowledge of basic mammalian biology. Offered: February. Classes: 2hrs lec & 4hrs prac/wk. Assessment: One 1.5hr theory exam, one 1hr prac exam, one 1200 word essay.

This unit of study aims to provide an understanding of the anatomy of the viscera of the thorax, abdomen and pelvis. Structures covered include the heart and associated great vessels, lungs, mediastinum and the abdominal viscera, the alimentary organs and the genitourinary system. The structure of anterior thoracic and abdominal walls and pelvis along with the nerve supply to the viscera and relevant endocrine structures is also covered. Emphasis is placed on the relationship of structure to function especially with respect to the important functions of breathing, digestion, excretion and reproduction. Students will also be encouraged to relate their understanding of the structures studied to current research into these structures in related fields such as molecular biology and physiology.

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. There are no higher award courses by coursework.

Department of Biochemistry

The Department teaches biochemistry to Science students, as well as to students in Medicine, Veterinary Science, Dentistry and Pharmacy.

Biochemistry 2001 (8 credit points) and Biochemistry 2002 (8 credit points), together provide a basic program for (a) students who wish to do only one year's study in the unit of study area and (b) for students who wish to continue on to the Senior units of study, Biochemistry 3001 (12 credit points) and Biochemistry 3002 (12 credit points). Advanced units of study based on the four one-semester units of study, Biochemistry 2901, 2902, 3901 and 3902 are available to selected students. An Honours unit of study designed for those wishing to enter research or to undertake work leading to a higher degree is conducted in the fourth year.

Additional Intermediate units of study in Biochemistry are Biochemistry 2101 (4 credit points) and Biochemistry 2102 (4 credit points).

Location

The Biochemistry Building (G08) is across City Road in the Darlington area behind the Wentworth Building. General enquiries should be directed to the Department Office on level 6 (Room 632).

Noticeboards

Noticeboards are in the foyer, level 3, and the practical laboratories relevant to each year of the course, viz:
- Biochemistry 2001 and 2002, laboratory 380
- Biochemistry 2901 and 2902, laboratory 302
- Biochemistry 3001, 3002, 3901, 3902 and 3904, laboratory 400

Registration

All Senior Year students (including those repeating a unit of study, and irregular students) are required to register with the Department, during the orientation period. Students will then be allocated the two days of the week on which to attend practical classes.

Students who attempt to register after the orientation period may find that they cannot be allocated to particular practical classes.

Advice on units of study

Students are strongly urged 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 area of Biochemistry (or Molecular Biology) in which a student may wish to major in their Senior year. Students wishing to major in Molecular Biology and Genetics in their Senior year should

have completed both Biochemistry 2001/2901 and Biology 2005/2905 in their Intermediate year. A major in Molecular Biology or Genetics would comprise two Senior (one semester) units of study in these areas, of which one could be, for example, Biochemistry 3001/3901. Departmental advisers listed in the handbook are available in the Department during the period prior to enrolment and during orientation.

BCHM 2001   Genes and Proteins
8 credit points
Dr Denyer, Dr Hancock, Biochemistry staff
Qualifying: 6 credit points of Junior Chemistry which must include one of CHEM 1101,1102, 1901,1902, 1903,1904 or, with the permission of the Head of Department, exceptional performance in CHEM 1001 or 1002. **Prohibition:** May not be counted with AGCH 2001 or BCHM 2101 or 2901. **Offered:** February. **Classes:** 3 lec & 5 prac/wk & voluntary tutorials. **Assessment:** One 3hr exam, one 2hr theory of prac exam, prac tasks.

The lectures in this unit of study introduce the main principles of biochemistry i.e. the molecular basis of life. In the beginning, the unit of study concentrates on proteins and, in particular, the mechanisms of action of enzymes in the light of what we know of their structures. The second half of the unit of study concentrates on nucleic acids (DNA and RNA) as the molecules of heredity and gene expression, and includes a section on DNA replication, transcription and translation. The processes of replication and transcription are highly controlled in multicellular organisms and these control mechanisms are discussed. The last section of the unit of study will describe how these processes are put together in a whole organism in order to maintain life. Particular emphasis will be put on the anabolism and catabolism of fuels under normal conditions and under conditions of feeding, starvation or exercise.

Practical: The practical component complements the theory component of BCHM 2001 by exposing students to experiments which investigate the regulation of gene expression, the manipulation of DNA molecules, the purification of proteins and the manipulation of 3-D protein images using computer graphics software. 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 protein chemistry research.

Textbooks

Garrett RH & Grisham CM. Biochemistry. Saunders 1999
Resource Manual for Biochemistry 2 Practical Sessions, Sem 1
Study Resource for Biochemistry 2001 (Study Guides and Past Papers)

BCHM 2002 Molecules, Metabolism and Cells
8 credit points
Dr Denyer, Dr Hancock, Biochemistry staff
Qualifying: BCHM 2001 or 2901. **Prohibition:** May not be counted with AGCH 2001 or BCHM 2102 or 2902. **Offered:** July. **Classes:** 3 lec & 5 prac/wk & voluntary tutorials. **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 regu-

lation 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. **Practical:** The practical component complements the theory component of BCHM 2002 by exposing students to experiments which investigate the effects of diet on the constituents of urine, the diagnosis of chronic disease using blood enzyme patterns, the measurement of glucose metabolism using radioactive tracers and the design of biochemical assays. During the unit of study, the generic skills developed in the practical component of BCHM 2001 will be nurtured by frequent use of computers and problem solving activities. However, student exposure to generic skills will be extended by the introduction of exercises designed to teach oral communication, instruction writing and feedback articulation skills. The techniques of radioisotope handling, enzyme and metabolite assay design, spectrophotometry and metabolic flux measurement will be taught as well as the basic laboratory abilities mastered in BCHM 2001.
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 2101   Genes and Proteins Theory
4 credit points
Dr Denyer, Biochemistry staff
Qualifying: 6 credit points of Junior Chemistry which must include one of CHEM 1101,1102,1901, 1902,1903,1904 or, with the permission of the Head of Department, exceptional performance in CHEM 1001 or 1002. **Prohibition:** May not be counted with AGCH 2001 or BCHM 2001 or 2901. **Offered:** February. **Classes:** 3 lec /wk. **Assessment:** One 3hr exam.
This unit of study comprises just the lecture component of BCHM 2001.
Textbooks
Garrett RH & Grisham CM. Biochemistry. Saunders 1999 (also
    suitable for BCHM 2102
Study Resource for Biochemistry 2001 (Study Guides and Past
    Papers)

BCHM 2102 Molecules, Metabolism and Cells Theory
4 credit points
Dr Denyer, Biochemistry staff
Qualifying: BCHM 2001, 2101 or 2901. **Prohibition:** May not be counted with AGCH 2001 or BCHM 2002 or 2902. **Offered:** July.
Classes: 3 lec/wk. **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 2901   Genes and Proteins (Advanced)
8 credit points
Dr Denyer, Dr Hancock, Biochemistry staff
Qualifying: 6 credit points of Junior Chemistry which must include one of CHEM 1101,1102,1901,1902,1903, 1904 or, with the permission of the Head of Department, exceptional performance in CHEM 1001 or 1002 (selected students). **Prohibition:** May not be counted with AGCH 2001 or BCHM 2001 or 2101. **Offered:** February. **Classes:** 3 lec & 5 prac/wk & voluntary tutorials.
Assessment: One 3hr & one 1 hr theory exam, one 2hr theory of prac exam, prac tasks, assignments.

The lecture and practical components are the same as for BCHM 2001. Selected students will be set special advanced assignments, and attend advanced tutorials.
Textbooks
Garrett RH & Grisham CM. Biochemistry. Saunders 1999
Resource Manual for Biochemistry 2 Practical Sessions, Sem 1
Study Resource for Biochemistry 2001 (Study Guides and Past
    Papers)

BCHM 2902   Molecules, Metabolism and Cells (Advanced)
8 credit points
Dr Denyer, Dr Hancock, Biochemistry staff
Qualifying: BCHM 2001 or 2901 (selected students). **Prohibition:** May not be counted with AGCH 2001 or BCHM 2002 or 2102.
Offered: July. **Classes:** 3 lec & 5 prac/wk, voluntary tutorials & advanced tutorials. **Assessment:** One 3hr & one 1 hr theory exam, one 2hr theory of prac exam, prac tasks, special assignments.
The lecture and practical components are the same as forBCHM 2002. Selected students will be set special advanced assignments, and attend advanced tutorials.
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 3001   Molecular Biology and Structural Biochemistry
12 credit points
Dr Easterbrook-Smith, Mrs Johnston, Dr Weiss, Biochemistry staff
Qualifying: BCHM 2002 or 2902, or with permission of Head of Department, BIOL 2005 or 2905 or excellent performance in BCHM 2001 or 2901 with a suitable Intermediate CHEM unit of study.
Prohibition: May not be counted with BCHM 3901. **Offered:** February. **Classes:** 4 lec & 8 prac/wk. **Assessment:** One 3hr exam, one 2hr exam, prac work.

This unit of study is designed to build on the units of study Biochemistry 2001 and Biochemistry 2002. It provides comprehensive training in molecular biology (with emphasis on eukaryotic systems) and structural biochemistry. The lecture series consists of core and option components. Students can choose from among the option components to enhance their knowledge of specialised topics. 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.

Core lectures: The core lectures are divided into two topic areas. The Molecular Biology section provides a thorough description of key areas of modern molecular biology, particularly hierarchies of gene regulation, mutations and disease, the cell cycle and programmed cell death, and shepherding proteins around the cell. The Structural Biochemistry section addresses the important areas of protein structure, ligand binding and drug design, macromolecular recognition and molecular immunology-

Option lectures: Option topics available in molecular biology include medical molecular biology, applied medical molecular biology, transcription and molecular cloning. Option topics available in structural biochemistry include protein engineering and drug design, macromolecular interactions and biophysical techniques.
Textbooks

LewinB.Genes VI. 1997
Course Manual for BCHM 3001/3901

BCHM 3002   Metabolic and Medical Biochemistry
12 credit points
Dr Easterbrook-Smith, Mrs Johnston, Professor Kuchel, Biochemistry staff
Qualifying: BCHM 2002 or 2902. **Prohibition:** May not be counted with BCHM 3902. **Offered:** July. **Classes:** 4 lec & 8 prac/wk.
Assessment: One 3hr exam, one 2hr exam, prac work.
This unit of study is designed to extend the overall metabolic picture presented in Biochemistry 2002 and 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 lecture series consists of core and option components. Students can choose from among the option components to enhance their knowledge of specialised topics. 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.

Core lectures

The core lectures are divided into several topic areas. The Metabolism and Disease section deals with metabolite exchange between various compartments in the mammaUan cell and how changes in this can lead to disease. Changes in transport and metabolism that affect the whole body are exemplified by diabetes, so this disease is dealt with in considerable detail. The Cell Growth and Cancer, and Signal Transduction sections deal with the regulation of cell growth and how the failure of this control leads to cancer; so intracellular chemical signalling and how it is involved in cancer are treated in depth. The Chemical Immunology and Sub-bacterial Organisms section deals with important aspects of modern biotechnology and medical diagnosis of disease, including some contemporary immunological methods; immunological surveillance and evasion of attack by viruses is paramount to our survival in the biosphere, so some aspects of virus biochemistry are discussed, as are the 'new' infective agents, the prions.

Option lectures

Option topics available in metabolism and disease include the biochemistry of exercise, receptors, cellular signalling, in vivo NMR spectroscopy. Option topics available in nutrition include vitamins, lipoproteins, macronutrients, xenobiotica.

Practical: The practical component is designed to complement the lecture series and provide students with experience in sophisticated biochemical techniques.

Textbooks

Cooper GM. The Cell: A Molecular Approach. OUP, 1997
Course Manual for BCHM 3002/3902/3904

BCHM3901 Molecular Biology and Structural Biochemistry (Advanced)

12 credit points
Dr Easterbrook-Smith, Mrs Johnston, Dr Weiss, Biochemistry staff
Qualifying: BCHM 2002 or 2902 or, with permission of Head of Department, BIOL 2005 or 2901, or excellent performance in BCHM 2001 or 2901 with suitable Intermediate Chemistry (selected students). **Prohibition:** May not be counted with BCHM 3001.
Offered: February. **Classes:** 4 lec & 8 prac/wk & 4 seminars.
Assessment: One 3hr exam, one 2hr exam, one 1 hr exam, prac work.

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

Textbooks

LewinB. Genes VI. 1997
Course Manual for BCHM 3001/3901

BCHM 3902 Metabolic and Medical Biochemistry (Advanced)

12 credit points
Dr Easterbrook-Smith, Mrs Johnston, Professor Kuchel, Biochemistry staff
Qualifying: BCHM 2002 or 2902 (selected students). **Prohibition:** May not be counted with BCHM 3002. **Offered:** July. **Classes:** 4 lec & 8 prac/wk & 4 seminars. **Assessment:** One 3hr exam, one 2hr exam, one 1hr exam, prac work.

The lecture and practical components of this units of study are the same as for BCHM 3002. Selected students will attend seminars related to the topics covered in the core lectures in this unit of study.

Textbooks

Cooper GM. The Cell: A Molecular Approach. OUP 1997
Course Manual for BCHM 3002/3902/3904

Biochemistry Honours

Dr Crossley

The unit of study runs from about mid-February until mid-November. 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 unit of study and are provided with a Ust of possible research projects. Potential research topics currently offered to students include:

- Anticancer drugs: synthesis and mechanism of action. Biochemistry of cellular signal transduction
- Kinetics of enzymic reactions
- The cause of diabetes and/or obesity; fuel metabohsm during exercise
- Structure and function of clusterin, a molecule impUcated in atherosclerosis
- X-ray crystallography of proteins which solve problems in molecular biology or are of potential clinical value
- MetaboUc pathways in boar spermatozoa
- NMR studies of the solution structure of vasoactive peptides and DNA binding proteins
- NMR studies of membrane transport and metabohsm in ceUs
- Eukaryotic transcription factors
- Bioavailability of trace elements and biochemical indicators of their nutritional status
- Studies on the coUagens of marsupials
- The effect of fibre on blood and urinary estrogens
- Chromosome repUcation and ceU 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; oUgosaccharides 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 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 minimum requirement for acceptance into the unit of study is a pass at the Credit level in 12 credit points of Senior Biochemistry units of study. However, it should be kept in mind that in deterrnining the grade of Honours to be awarded at the end of the Honours year, the level of attainment in the first three years of the undergraduate course is taken into account. The Department is therefore reluctant to accept students into the Honours unit of study where there is little evidence of merit in subjects other than Biochemistry. It should be noted that the number of students accepted into the Honours unit of study may be limited because of resource restrictions (e.g. availability of a supervisor and/or laboratory space) and that, in the event of there being more apphcants than resources wiU allow, offers wiU be made on the basis of academic merit.

School of Biological Sciences

Advice on units of study
Members of the Biology staff are normally present among
Faculty Advisers during enrolment week. Any student needing
advice before enrolling should make an appointment to see a
Departmental adviser from the School of Biological Sciences.
Assistance during semester
The offices of Junior year Biology staff are on the 5th floor of
Carslaw. 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.

BIOL 1001   Concepts in Biology
6 credit points
Assumed knowledge: HSC 2-unit Biology course. **Prohibition:**
May not be counted with BIOL 1901. **Offered:** February. Classes: 3
lec & 3 prac/wk. **Assessment:** One 2hr exam, assignments,
classwork.

'Concepts in Biology' is an introduction to the major themes of
modern biology. Starting with interactions between organisms
in biological communities, we move on to the diversity of mi-
croorganisms, plants and animals. This is followed by introduc-
tory cell biology, which particularly emphasises how cells ob-
tain and use energy, and leads into an introduction to molecular
biology through the role of DNA in protein synthesis and devel-
opment. The genetics of organisms is then discussed, leading to
consideration of theories of evolution and the origins of the di-
versity of modern organisms. It is recommended that this unit of
study be taken before all other Junior units of study in Biology.
Textbooks
Knox R B et al. Biology. McGraw-Hill, 1995

BIOL 1901   Concepts in Biology (Advanced)
6 credit points
Dr G M Wardle, Dr Raphael
Prerequisite: UAI of at least 93 and at least 80% in HSC 2-unit
Biology or equivalent, or by invitation, or a UAI of at least 95 (if no
University level biology units have been taken), or Distinction or
better for BIOL 1002,1003,1902 or 1903. Assumed knowledge:
HSC 2-unit Biology course. Prohibition: May not be counted with
BIOL 1001. Offered: February. Classes: 3 lec & 3 hrs prac/wk.
Assessment: One 2hr exam, assignments, classwork.
NB: Changes to prerequisites subject to Faculty approval.
Selected students may be invited to participate in a more de-
manding alternative component of Concepts in Biology. The
content and nature of this component will be determined each
year. Details and selection criteria are announced at the start of
semester.

BIOL 1002   Living Systems
6 credit points
Assumed knowledge: HSC 2-unit Biology course. Prohibition:
May not be counted with BIOL 1902. Offered: July. Classes: 3 lec &
3 prac/wk. Assessment: One 2hr exam, assignments, classwork.
'Living Systems' deals with the biology of all sorts of organ-
isms, from bacteria to large plants and animals, and emphasises
the ways in which they can live in a range of habitats. The im-
portance 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 physiol-
ogy 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 applica-
tions of knowledge of genetics and ecology to practical prob-
lems in medicine, agriculture and conservation are introduced.
It is recommended that Concepts in Biology 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 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, 1995

BIOL 1902   Living Systems (Advanced)
6 credit points
Dr G M Wardle, Dr Raphael
Prerequisite: UAI of at least 93 and at least 80% in HSC 2-unit
Biology or equivalent, or by invitation, or a UAI of at least 95 (if no
University level biology units have been taken), or a Distinction or
better in BIOL 1001 or 1901. **Assumed knowledge:** HSC 2-unit
Biology course. **Prohibition:** May not be counted with BIOL 1002.
Offered: July. Classes: 3 lec & 3 hrs prac/wk. **Assessment:** One
2hr exam, assignments, classwork.
NB: Changes to prerequisites subject to Faculty approval.
Selected students may be invited to participate in a more de-
manding alternative component of Living Systems. The content
and nature of this component will be determined each year. De-
tails and selection criteria are announced in the first semester.

BIOL 1003   Human Biology
6 credit points
Assumed knowledge: HSC 2-unit Biology course. **Prohibition:**
May not be counted with BIOL 1903. **Offered:** July. **Classes:** 2 lec, 1
session independent study & 3 prac/wk. **Assessment:** One 2hr
exam, assignments, 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, distri-
bution 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 contro-
versial aspects of human genetics. It is recommended that Con-
cepts in Biology 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 1901, provides entry to Intermedi-
ate units of study in genetics and cell biology in the School of
Biological Sciences, and with good performance or permission
the School's other Intermediate units of study.
Textbooks
Benjamin CL. et al. Human Biology. McGraw Hill, 1997

BIOL 1903   Human Biology (Advanced)
6 credit points
Dr G M Wardle
Prerequisite: UAI of at least 93 and at least 80% in HSC 2-unit
Biology or equivalent, or by invitation, or a UAI of at least 95 (if no
University level biology units have been taken), or a Distinction or
better in BIOL 1001 or BIOL 1901. **Assumed knowledge:** HSC 2-
unit Biology course. **Prohibition:** May not be counted with BIOL
1003. **Offered:** July. Classes: 2 lec, 1 session independent study &
3 hrs prac/wk. **Assessment:** One 2hr exam, assignments,
classwork.
NB: Changes to prerequisites subject to Faculty approval.
Selected students may be invited to participate in a more de-
manding alternative component of Human Biology. The content
and nature of this component will be determined each year. De-
tails and selection criteria are announced in the first semester.

BIOL 1500 Biology Today
6 credit points
Prof D J Patterson
Assumed knowledge: No previous knowledge required.
Prohibition: May not be counted with BIOL 1001,1901,1002,
1902,1003,1903. May not be counted as a prerequisite for any
Intermediate units of study in Biology. Offered: July. Classes: 1 lec,
2 tut & 3hr project/wk. Assessment: One 2hr exam (40%), 3
Tutorials (15%), 12 quizzes (15%), 3 presentations (30%).
This unit of study begins with a discussion of the nature, scope
and diversity of biology and why it is of increasing relevance in
policy development in contemporary society. Three themes each
of 4 weeks follow: 1) Ecology and the environment, 2) Genetics
and the Molecular Technologies, and 3) Evolution and Biodi-
versity. Each week introduces a new issue of current concern or
interest, and students work co-operatively and independently to
develop an in depth understanding of the perspectives on the
issue. The style of delivery fosters independent work, and ge-
neric learning and communication skills. There is no laboratory
material.

Lectures and knowledge development
The set of lectures for each theme will introduce a current issue, give the conceptual background, present major historical discoveries related to the topic, and provide the conceptual links to other topics. This is followed by one time-tabled hour of internet mediated development of further knowledge and the context of the issue. One tutorial per week provides further opportunity for knowledge acquisition. This is followed by three hours of research done within the context of peer groups.

Team work and generic skills

Students will work in small groups to research each topic. There will be a heavy reliance on information available from the internet. There is a heavy reliance on issue-based (= problem-based) learning, with students being directed into problem areas by the curriculum and the tutorials and then develop inquisitiveness to pursue the matter through research by assigned readings from textbooks, research books and articles as well as from the Internet.

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 (Room 234, Macleay Building, A12). Students should discuss their preferences, together with the other units of study they propose to study, with a Biology staff member before enrolling.

Students should note that there is a core component in all units of study. Students taking more than one unit in Intermediate Biology in one semester must nominate their "preferred" unit and will have extra materials in this unit and do the core in the other unit.

The following Intermediate units of study are offered:

February Semester

Group 1
• BIOL 2001 Animals A
• BIOL 2101 Animals A-Theory
• BIOL 2901 Animals A (Advanced)

Group 2
• BIOL 2004 Plant Ecology and Diversity
• BIOL 2904 Plant Ecology and Diversity (Advanced)

Group 3
• BIOL 2006 CeU Biology
• BIOL 2106 CeU Biology - Theory
• BIOL 296 Cell Biology (Advanced)

July Semester

Group 4
• BIOL 2002 Animals B
• BIOL 2102 Animals B-Theory
• BIOL 2902 Animals B (Advanced)

Group 5
• BIOL 2003 Plant Anatomy and Physiology
• BIOL 2903 Plant Anatomy and Physiology (Advanced)

Group 6
• BIOL 2005 Molecular and General Genetics
• BIOL 2105 Molecular and General Genetics - Theory
• BIOL 2905 Molecular and General Genetics (Advanced)

Group 7
• BIOL 2007 Introductory Entomology

Not more than one unit of study may be taken from each group, and a maximum of 32 credit points of Intermediate Biology may be counted towards the award course. Qualifying units of study for certain Senior Biology units of study are defined as combinations of 8 credit points Intermediate Biology units of study (see the Senior unit of study descriptions or Information for Students booklets).

BIOL 2001   Animals A
8 credit points
Dr M B Thompson, Dr E L May
Qualifying: BIOL 1001 or 1901 and one of BIOL 1002,1902, 1003, 1903. **Prerequisite:** CHEM 1102 or 1902 or 1904 or 1909.

Prohibition: May not be counted with BIOL 2101 or 2901. **Offered:** February. Classes: 3 lec, 1 discussion group & 3 prac/wk or 4 lec & 3 prac/wk. **Assessment:** One 3hr exam, one 3hr prac exam, 1 essay, discussion group work, quizzes.

NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2004 or 2904 or 2006 or 2906 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work. Changes to prerequisistes subject to Faculty approval.

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. This material is presented within the conceptual framework of evolution and the principles and use of phylogeny and classification. Discussion groups further explore concepts of evolution, phylogeny and biodiversity and provide opportunity to develop communication skills. The unit of study is designed to be taken in conjunction with BIOL 2002 Animals B; 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 Biology 2002 Animals B provides entry into animal modules in Senior Biology units of study.

BIOL 2901   Animals A (Advanced)
8 credit points
Dr M B Thompson
Qualifying: Distinction average in BIOL 1001 or 1901 and one of BIOL 1002,1902,1003,1903. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prerequisite:** CHEM 1102 or 1902 or 1904 or 1909. **Prohibition:** May not be counted with BIOL 2001 or 2101. **Offered:** February.

NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2004 or 2904 or 2006 or 2906 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work. Changes to prerequisistes subject to Faculty approval.

Qualified students will participate in alternative components of BIOL 2001 Animals A. The content and nature of these components may vary from year to year. See prerequisites for Senior units of study in Biology.

BIOL 2101   Animals A-Theory
4 credit points
Dr M B Thompson, Dr E L May
Qualifying: BIOL 1001 or 1901 and one of BIOL 1002,1902, 1003, 1903. Prohibition: May not be counted with BIOL 2001 or 2901. Offered: February. Classes: 3 lec & 1 prac/wk. Assessment: One 2hr theory exam, quizzes, one 1 hr prac exam.

NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Not a prerequisite for Senior units of study in Biology. Students taking this unit concurrently with (or following completion of) BIOL 2004 or 2904 or 2006 or 2906 must complete 16 hours of alternative work in one unit, in place of the core material common to both units. Students taking BIOL 2101 concurrently with (or following completion of) BIOL 2106 must complete 16 hours of alternative work in place of the core material common to both units, and if taking these units.concurrently, must elect at enrolment in which unit they wish to do the alternative work.

This unit of study provides a broad background to the diversity of animals through lectures and museum-style displays. The material is presented within the conceptual framework of evolution and the principles and use of phylogeny and classification. It is suitable for students who are majoring in other areas of biology or other subjects but who wish to acquire an introduc-

tion to animal biology. The unit of study is designed to be taken with Biology 2102 Animals B - Theory. The diversity, morphology and evolution of most invertebrate phyla are presented.

BIOL 2002   **Animals B**
8 credit points
Dr M.B.Thompson, Dr E L May
Qualifying: BIOL 1001 or 1901 and one of BIOL 1002,1902, 1003, 1903. **Prerequisite:** CHEM 1102 or 1902 or 1904 or 1909.
Prohibition: May not be counted with BIOL 2102 or 2902. **Offered:** July. **Classes:** 3 lec, 1 discussion group & 3 prac/wk or 4 lectures & 3 prac/wk & one field trip. **Assessment:** One 3hr theory exam, one 3hr prac exam, 1 poster assignment, 1 essay, quizzes.
NB: The content of Biology 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concwrently with (orfollowing completion of) BIOL 2003 or 2903 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work Students taking BIOL 2002 concurretnlty with BIOL 2005 or 2905 must complete the 32 hours of alternative work as part of BIOL 2002. Changes to prerequisistes subject to Faculty approval.

This unit of study completes the grounding in the diversity of animals at the level of phylum introduced in Biology 2001 Animals A by lectures, laboratory classes, and in the field with an intensive 3.5 day field trip. It focuses on vertebrates and invertebrate phyla not covered in BIOL 2001 Animals A. An introduction to the terminology and processes of molecular genetics and recombinant DNA technology is given. Lectures and discussion groups further explore concepts of evolution, phylogeny biodiversity and animal function. This unit of study complements BIOL 2001 Animals A and should preferably be taken after that unit of study. It is a prerequisite for most animal modules in Senior Biology.

BIOL 2902   Animals B (Advanced)
8 credit points
Dr M B Thompson
Qualifying: Distinction average in BIOL 1001 or 1901 and one of BIOL 1002,1902,1003,1903. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prerequisite:** CHEM 1102 or 1902 or 1904 or 1909.
Prohibition: May not be counted with BIOL 2002 or 2102. **Offered:** July.
NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (or following completion of) BIOL 2003 or 2903 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work. Students taking BIOL 2902 concurretnlty with BIOL 2005 or 2905 must complete the 32 hours of alternative work as part of BIOL 2902. Changes to prerequisistes subject to Faculty approval.

Qualified students will participate in alternative components of BIOL 2002 Animals B. The content and nature of these components may vary from year to year. See prerequisites for Senior units of study in Biology

BIOL 2102   Animals B-Theory
4 credit points
Dr M B Thompson and Dr E L May
Qualifying: BIOL 1001 or 1901 and one of BIOL 1002,1902,1003, 1903. **Prohibition:** May not be counted with BIOL 2002 or 2902. **Offered:** July. **Classes:** 3 lec & 1 prac/wk. **Assessment:** One 2hr theory exam, quizzes, one 1hr prac exam.
NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Not a prerequisite for Senior units of study in Biology. Students taking this unit concurrently with (or following completion of) BIOL 2003 or 2903 or 2002 or 2905 must complete 16 hours of alternative work in one unit, in place of the core material. Students taking BIOL 2102 concurretnlty with (or following completion of) BIOL 2105 must complete 16 hours

of alternative work as part of BIOL 2102 inplace of core material common to both units.

This unit of study provides an introduction to the diversity of animals at the level of phylum. It provides a broad background in the diversity of animals and an introduction to phylogeny through lectures and demonstration material in laboratory classes. It focuses on vertebrates and invertebrate phyla not covered in Biology 2101 Animals A - Theory and includes an introduction to the terminology and processes of molecular genetics and recombinant DNA technology. This unit of study is designed to be taken with BIOL 2101 Animals A - Theory and should preferably be taken after that unit of study. It is suitable for students who are concentrating on other areas of biology or other units of study but who wish to acquire a background in animal biology.

BIOL 2003   Plant Anatomy and Physiology
8 credit points
Assoc. Prof. Allaway, Dr McGee, Dr Overall, Dr Quinnell
Qualifying: BIOL 1001 or 1901 and one of BIOL 1002,1902,1003, 1903. Prohibition: May not be counted with BIOL 2903. Offered: July. Classes: 2 lec, 1 prac/audiovisual & 1 tut/wk. Assessment: Assessment one 2.5hr exam, one prac exam, project, classwork.
NB: The content of Biology 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (orfollowing completion of) BIOL 2002 or 2902 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work. Students taking BIOL 2003 concurretnlty with BIOL 2005 or 2905 must complete the 32 hours of alternative work as part of BIOL 2003.

The unit of study explores basic concepts in structure-function relationships in plants and their component organs, tissues and cells. It covers fundamental processes in plant growth and development including photosynthesis, translocation, water transport, nutrition, responses to light and gravity, and the role of plant hormones. Special attention is given to the anatomy and physiology of the Australian flora. Lectures and self-instructional audiovisual study are augmented by group discussions and laboratory experiments. This unit of study complements BIOL 2004 and leads up to advanced plant modules in Senior Biology.

BIOL 2903   Plant Anatomy and Physiology
(Advanced)
8 credit points
Assoc. Prof W G Allaway
Qualifying: Distinction average in BIOL 1001 or 1901 and one of BIOL 1002,1902,1003,1903. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibition:** May not be counted with BIOL 2003. **Offered:** July.
NB: The content of BIOL 1002/1902 is assumed knowledge and students entering from BIOL 1003 or 1903 will need to do some preparatory reading. Students taking this unit concurrently with (orfollowing completion of) BIOL 2002 or 2902 must complete 32 hours of alternative work in one unit, in place of the core material common to both units and if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work. Students taking BIOL 2903 concurretnlty with BIOL 2005 or 2905 must complete the 32 hours of alternative work as part of BIOL 2903.

Qualified students will participate in alternative components of BIOL 2003. The content and nature of these components may vary from year to year. See prerequisites for Senior units of study in Biology.

BIOL 2004   Plant Ecology and Diversity
8 credit points
Dr Henwood, Dr McGee, Dr Marc, Dr Quinnell, Dr Wardle
Qualifying: BIOL 1001 or 1901 and one of BIOL 1002,1902,1003, 1903. **Prohibition:** May not be counted with BIOL 2904. **Offered:** February. **Classes:** 2 lec, 1 prac/audiovisual & 1 tut/wk.
Assessment: One 3hr exam, 1 prac exam, one 1000w essay, classwork.

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

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

BIOL 2904   Plant Ecology and Diversity (Advanced)
8 credit points
Dr M Henwood
Qualifying: Distinction average in BIOL 1001 or 1901 and one of BIOL 1002,1902, 1003,1903. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibition:** May not be counted with BIOL 2004. **Offered:** February.

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

Qualified students will participate in alternative components of BIOL 2004. The content and nature of these components may vary from year to year. See prerequisites for Senior units of study in Biology.

BIOL 2005   Molecular and General Genetics
8 credit points
Dr K Raphael
Qualifying: BIOL 1001 or 1901 and one of BIOL 1002,1902,1003, 1903. Prerequisite: CHEM 1102 or 1902 or 1904 or 1909. BCHM 2001 or 2901 and BIOL 2006 or 2906 are highly recommended. Prohibition: May not be counted with BIOL 2105 or 2905. Offered: July. Classes: 3 lec, 1 tut & 4 prac/wk. Assessment: One 3hr exam, one 2hr theory of prac exam, assignments, pracs.

NB: Students taking this unit concurrently with (or following completion of) BIOL 2002 or 2902 or 2003 or 2903 must complete 32 hours of alternative work in the unit other than BIOL 2005, in place of the core material common to both units. Students enrolling in BIOL 2005 after having completed BIOL 2002 or 2902 or 2003 or 2903 will be required to complete 32 hours of alternative work in BIOL 2005. Changes to prerequisistes subject to Faculty approval.

A unit of study which covers the fundamentals of genetics in lower and higher organisms, and the use of molecular genetics techniques. Topics including Mendelian genetics, linkage, gene and genome mapping, chromosome organisation and change, gene mutation, microbial and bacterial genetics, phage genetics, cloning vectors and application of recombinant DNA technology, developmental genetics, molecular evolution, and ecological and conservation genetics are covered in lectures, tutorials and laboratory classes. This is the qualifying unit of study for BIOL 3103 and BIOL 3203. The combination of this unit with Biology 2006 and Biochemistry 2001 is recommended.

BIOL 2905   Molecular and General Genetics (Advanced)
8 credit points
Dr K Raphael
Qualifying: Distinction average in BIOL 1001 or 1901 and one of BIOL 1002,1902,1003,1903. These requirements may be varied

and students with lower averages should consult the Unit Executive Officer. **Prerequisite:** CHEM 1102 or 1902 or 1904 or 1909. BCHM 2001 or 2901 and BIOL 2006 or 2906 are highly recommended. **Prohibition:** May not be counted with BIOL 2005 or 2105. **Offered:** July.

NB: Students taking this unit concurrently with (or following completion of) BIOL 2002 or 2902 or 2003 or 2903 must complete 32 hours of alternative work in the unit other than BIOL 2005, in place of the core material common to both units. Students enrolling in BIOL 2005 after having completed BIOL 2002 or 2902 or 2003 or 2903 will be required to complete 32 hours of alternative work in BIOL 2005. Changes to prerequisites subject to Faculty approval.

Qualified students will participate in alternative components of BIOL 2005 Molecular and General Genetics. The content and nature of these components may vary from year to year. This is a core Intermediate unit of study in the BSc (Molecular Biology and Genetics) award course. See prerequisites for Senior units of study in Biology

BIOL 2105   Molecular and General Genetics - Theory
4 credit points
Dr K Raphael
Qualifying: BIOL 1001 or 1901 and one of BIOL 1002,1902,1003, 1903. **Prerequisite: CHEM 11**02 or 1902 or **1904** or 1909. **Prohibition:** May not be counted with BIOL 2005 or 2905. **Offered:** July. **Classes:** 3 lec, 1 tut/wk. **Assessment:** One 3hr exam, assignments.

NB: Not a prerequisite for Senior units of study in Biology. Students taking this unit concurrently with (or following completion of) BIOL 2002 or 2902 or 2003 or 2903 must complete 16 hours of alternative workBIOL2105, inplace of the core material common to both units. Students taking BIOL 2105 concurretnlty with (orfollowing completion of) BIOL 2102 must complete 16 hours of alternative work inplace of core material common to both units, and if these units are taken concurrently, must elect at enrolment in which unit they wish to do the alternative work. Changes to prerequisistes subject to Faculty approval.

This unit of study provides a solid theoretical foundation in genetics. Topics include Mendelian genetics, chromosomes, linkage and mapping, mutation, microbial genetics, recombinant DNA technology, developmental, ecological and conservation genetics, and molecular evolution. The unit of study is presented in the form of lectures and tutorials only; there are no practical classes. It is not suitable for students wishing to continue with genetics in their Senior year, for which BIOL 2005 or BIOL 2905 are appropriate.

Not a prerequisite for Senior units of study in Biology

BIOL 2006   Cell Biology
8 credit points
Dr J Marc
Qualifying: BIOL 1001 or 1901 and one of BIOL 1002,1902,1003, 1903. **Prerequisite: CHEM 1102** or 1902 or **1904** or 1909. **Prohibition:** May not be counted with BIOL 2106 or 2906. **Offered:** February. **Classes:** 3 lec, 1 tut & 3-4 prac hrs/wk. **Assessment:** One 3hr theory exam, one 2hr theory of prac exam, pracs & assignments.

NB: Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2004 or 2904 must complete 32 hours of alternative work in one unit, inplace of the core material common to both and, if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work. Changes to prerequisistes subject to Faculty approval.

A unit of study on cell biology and development in plants and animals, emphasizing the functioning of the cell and favouring the molecular perspective. Topics include cell and organelle structure, function and evolution, cellular development and differentiation, and embryonic development. The unit of study is given by means of lectures, tutorials, discussion groups and laboratory classes. It leads into Cell Biology and Physiology modules in Senior Biology, and is designed to complement BIOL 2005 Molecular and General Genetics. Students intending to

BSc

Units of study

Biology

specialise in areas of genetics, cell biology or development are advised to take this combination.

BIOL 2906   Cell Biology (Advanced)
8 credit points
Dr J Marc
Qualifying: Distinction average in BIOL 1001 or 1901 and one of BIOL 1002,1902,1003,1903. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prerequisite:** CHEM 1102 or 1902 or 1904 or 1909. **Prohibition:** May not be counted with BIOL 2006 or 2106. **Offered:** February.

NB: Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2004 or 2904 must complete 32 hours of alternative work in one unit, in place of the core material common to both and, if taking the units concurrently, must elect at enrolment in which unit they wish to do the alternative work. Changes to prerequisites subject to Faculty approval.

Qualified students will participate in alternative components of BIOL 2006. The content and nature of these components may vary from year to year. This is a core Intermediate unit of study in the BSc (Molecular Biology and Genetics) award course. See prerequisites for Senior units of study in Biology

BIOL 2106   Cell Biology - Theory
4 credit points
Dr J Marc
Qualifying: BIOL 1001 or 1901 and one of BIOL 1002,1902,1003, 1903. **Prerequisite:** CHEM 1102 or 1902 or 1904 or 1909. **Prohibition:** May not be counted with BIOL 2006 or 2906. **Offered:** February. **Classes:** 3 lec & 1 tut/wk. **Assessment:** One 3hr theory exams, assignments.

NB: Not a prerequisite for Senior units of study in Biology. Students taking this unit concurrently with (or following completion of) BIOL 2001 or 2901 or 2004 or 2904 must complete 16 hours of alternative work, in place of the core material common to both. Students taking BIOL 2106 concurrenlty with (or following completion of) BIOL 2101 must complete 16 hours of alternative work in place of core material common to both units, and if these units are taken concurrently, must elect at enrolment in which unit they wish to do the alternative work. Changes to prerequisistes subject to Faculty approval.

This unit of study provides a solid theoretical foundation in cellular and developmental biology. Topics include cell and organelle structure, function and evolution, cellular development and differentiation, and embryomc development. It is presented in the form of lectures and tutorials only; there are no practical classes. This unit of study is not suitable for students continuing with genetics, cell biology or development options in Senior year, for which BIOL 2006 or BIOL 2906 are appropriate.

BIOL 2007   Introductory Entomology
8 credit points
Dr Meats, Dr Rose
Qualifying: BIOL 1001 or 1901 and one of BIOL 1002,1902,1003, 1903. **Prerequisite:** CHEM 11 02 or 1902 or 1904 or 1909. **Offered:** July. **Classes:** 2 lec, 1-2 tut & 4 prac/wk. **Assessment:** One 3hr theory exam, assignment, insect collection.

NB: Tlie content of BIOL 1002/1902 is assumed knowledge and students enteringfrom BIOL 1003 or 1903 will need to do some preparatoiy reading. See prerequisites for Senior units of study in Biology. Changes to prerequisistes subject to Faculty approval.

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. Leads into the Entomology module in Senior Biology.

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 (Room 234, Macleay Building, A12). This booklet gives detailed synopses of all Senior units of study and modules.

(b) discuss their choice of units of study with a Biology staff member before enrolling.

(c) register in Room 227 (Building A08) during the first week of first semester.

Six 12 credit point units of study are available. They are arranged in three compatible timetables.

Timetable 1
- BIOL 310 IF Ecophysiology February Semester
- Ecophysiology
- BIOL 320IS Cellular and Systems Physiology July Semester
- Cellular and Systems Physiology core
- Animal Physiology module
- Plant Cells and Molecules module

Timetable 2
- BIOL 3102F Evolution and Diversity of the Australian Biota February Semester (MS)
- Evolution and Diversity of the Australian Biota core (MS)
- Plant Diversity and Biogeography module
- Biology of Terrestrial Vertebrates module
- Marine Biology module (MS)
- Entomology
- BIOL 3202S Ecology July Semester (MS)
- Ecology core (MS)
- Marine Ecology module (MS)
- Terrestrial Ecology module
- Plant Ecology module

Timetable 3
- BIOL 3103F Molecular Genetics and Recombinant DNA Technology February Semester
- BIOL 3903F Molecular Genetics and Recombinant DNA Technology (Advanced) February Semester
- BIOL 3203S Eukaryotic Genetics and Development July Semester
- BIOL 3904S Eukaryotic Genetics and Development (Advanced) July Semester

Locations of lectures and practical classes are given in the booklet Information for Students Considering Senior Biology Units of Study.

A unit of study may involve an obligatory core and one associated module. Any combination of units of study may be chosen subject to timetable and prerequisite constraints. Modules in any unit of study are only available if the core part has been taken first, and cores cannot be taken without being followed by an associated module. An exception to this rule applies to those Marine Science students who have chosen to do only six credit points of Senior Biology in first semester: in this case, students may take either the Evolution and Diversity of the Australian Biota core or the Marine Biology module (first semester, starting in week 7) in isolation from the other.

Units of study, modules, and places in modules, are offered subject to student numbers, availability of staff and resources. Quotas may be imposed on any Senior Biology module from time to time and in that event entry would normally be based on academic performance.

Marine Science students must do 24 credit points of Marine Science but are allowed to include from 6 to a maximum of 18 credit points of 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 Senior Biology units of study.

Selecting Unit of Study options
Select your core and associated modules after (a) checking that you have passed the qualifying units of study stated for each of the modules listed below, and (b) checking your timetable. You are strongly advised to check the most up-to-date information, including details of quotas, in the booklet

Information for Students Considering Senior Biology Units of Study, available from the School Office in Room 234, Building A12.

Textbooks

A list of textbooks and reference books is provided in the booklet: Information for Students Considering Senior Biology Units of Study, obtainable from the School Office in Room 234, Building A12.

BIOL 3101   Ecophysiology

12 credit points
Prof. I D Hume and other Biological Sciences staff
Qualifying: 16 credit points of Intermediate Biology including BIOL 2002 or 2003 or 2006 or 2902 or 2903 or 2906. Students are advised to consult the School. **Offered:** February. **Classes:** 4 lec and 8 prac/wk, one 3-day field trip. Timetable 1. **Assessment:** One 3hr exam, field trip quiz, assignments.

Ecophysiology covers physiological interactions between organisms and their environments. The range of environments inhabited by organisms is outlined and the influences of important environmental parameters including temperature, water, salt, pH, and respiratory gases are investigated. Physiological interactions among animals, plants and fungi are discussed. More in depth topics in animal physiology includes thermal biology, digestive physiology, water and salt balance, scaling metabolism and energetics of locomotion. The focus is on vertebrates, but invertebrate examples are used also. Further detailed analysis of plant and fungal ecophysiology concerns understanding of mechanisms that determine the function of plants and/or fungi in their environments. Plants from different environments and, in particular, their interaction with fungi are examined. We are concerned with the reaction of plants/fungi and plant/fungal associations to environmental stress and how we assess the importance of these factors on plant growth and development.

BIOL 3901   Ecophysiology (Advanced)

12 credit points
Prof. I D Hume
Qualifying: Distinction avereage 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. **Prohibition:** May not be counted with BIOL 3101. **Offered:** February. **Classes:** 4 lec, 6hrs prac, 2hr project/wk. **Assessment:** One 3hr exam, field trip quiz, assignments and project report.

Qualified students will participate in alternative components of the BIOL 3101 Ecophysiology unit of study. The content and nature of these components may vary from year to year.

BIOL 3201   Cellular and Systems Physiology

12 credit points
Assoc. Prof. O Hoegh-Guldberg and other Biological Sciences staff
Qualifying: 16 credit points of Intermediate Biology, including BIOL 2001 or 2901 and 2002 or 2902 or BIOL 2003 or 2006 or 2903 or 2906. Some modules have specific prerequisites; consult list of modules; students are advised to consult the School. **Offered:** July. **Classes:** 4 lec & 4 prac/wk, excursion. Timetable 1. **Assessment:** One 3hr exam, assignments, prac quiz.

Cellular and Systems Physiology Core

The core occupies the lectures and laboratories for weeks 1-6 before students elect one of the modules below. The core covers aspects of physiology at the cellular level common to most organisms. The nature of cell membranes, permeability, active transport and tie importance of these processes in producing electrical gradients are discussed and examples provided, relating these to both plant and animal models. The interactions between cells are an important theme in the cell physiology core which provides important background on cell signalling and the concepts of immunity. Recent ideas on the cytoskeleton and the control of the cell cycle are discussed. The core includes an introduction to molecular techniques as used in contemporary physiology.

Animal Physiology module

Assoc. Prof. Hoegh-Guldberg, Dr Meats.
    Qualifying: Biology 2001 and 2002 or 2901 and 2902
    The module examines the basis of physiological responses by animals. Mechanisms in animal adaptation are covered at the level of cells, tissues, organs and whole organisms. They are related to the physiological ecology of the species. Both vertebrate and invertebrate examples are used. There is a large emphasis on the practical aspects of physiological experimentation and associated methodologies. The lecture series discusses a variety of homeostatic mechanisms, including maintenance of water and salt balance, acid-base state, regulation of respiration and blood function as well as muscle function and vision systems. Each topic is explored from the aspect of process and mechanism before relating these to the requirements of the animal. In this way the response to environmental changes, and the role of each system in the adaptation of animal to environment, can be outlined. The theory and practical exercises are complemented by a four-day field exercise in environmental physiology, adaptive biology and field monitoring.

Plant Cells and Molecules module

Assoc. Prof. Allaway, Prof. Larkum, Dr Marc, Assoc. Prof. Overall
    Prerequisite: 16 credit points of Intermediate Biology including Biology 2003 or 2903 or 2006 or 2906
    Current topics at the interface of plant molecular biology, plant cell biology and developmental physiology are explored. Subjects covered include the cytoskeleton, cell cycle control, recent ideas on gravitropism and phytochrome, hormones, signal transduction apical meristems and flowering. Advances in the molecular understanding of plant physiology and development are discussed. Practical work, which uses a variety of plant material including protoplasts, suspension cultures, Arabidopsis seedlings and mature plants, includes a range of molecular techniques, including immunocytochemistry, protein purification and characterisation and fluorescence and gas-exchange methods for photosynthetic analysis. The excursion takes the form of a workshop including seminars and discussion groups.

BIOL 3921   Cellular and Systems Physiology (Advanced)

12 credit points
Assoc. Prof. O Hoegh-Guldberg
Qualifying: Distinction average in 16 credit points of Intermediate Biology including BIOL 2001 or 2901 and 2002 or 2902 or BIOL 2003 or 2006 or 2903 or 2906. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibition:** May not be counted with BIOL 3201. **Offered:** July. Classes: 4hrs lees, 6hrs pracs, 2hrs project/wk. **Assessment:** Project seminar 5%, Assignment 40%, Project Report 15%, Exam 40%.

Qualified students will participate in alternative components of the BIOL 3201 Cellular and Systems Physiology. The content and nature of these components may vary from year to year.

BIOL 3102   Evolution and Diversity of the Australian Biota (MS)

12 credit points
Dr M.Henwood and other Biological Sciences staff
Qualifying: 16 credit points of Intermediate Biology, including BIOL 2001 or 2901 and 2002 or 2902 or BIOL 2003 or 2903 and 2004 or 2904; or BIOL 2001 or 2901 and 2002 or 2902 and 2007. Some modules have specific prerequisites; consult list of modules; students are advised to consult the School. MARS 3001 students may take the Evolutionary Core without taking a module, or Marine Biology module without Core. **Offered:** February. **Classes:** 4 lec and 8 prac/wk. Timetable 2. **Assessment:** One 3hr exam, assignments, projects.

Evolution and Diversity of the Australian Biota (MS) Core

The core takes as its theme the 'uniqueness' of the Australian aquatic and terrestrial biota. Students are exposed to current concepts (and the theories upon which they are based) concerning the origin, evolution and recognition of various components of the Australian biota including protists, plants and animals. Evolution and diversity are major themes of the unit of study. The lecture series is complemented by a series of discussion groups in which students will be given tie opportunity to gain experience of Australian organisms and the analytical techniques employed to study them. The core prepares students for one of a number of modules that will permit the study of various aspects of the Australian biota at a deeper level.

Plant Diversity and Biogeography module
Dr Henwood, Dr Taylor and others

Qualifying: 16 credit points of Intermediate Biology including Biology 2004 or 2904.

This module deals with the reproductive biology, biogeography and evolution of flowering plants. Students are introduced to the latest methodologies and data sources employed in identifying evolutionary units (both past and present) and reconstructing their phylogenetic relationships. The general apphcation of systematics—for example in ecology and conservation - will be considered.

Biology of Terrestrial Vertebrates module
Prof. Shine, Dr Dickman and others

Qualifying: 16 credit points of Intermediate Biology including Biology 2002 or 2902.

Classes: February Semester: 4 lec and 8 prac/wk, two 2-day field courses. Timetable 2

Assessment: core assessment plus one 1.5hr exam, assignments, projects

An evolutionary perspective on the radiation of terrestrial vertebrates, with special emphasis on the biogeography, phytogeny, morphology and ecology of representative taxa in the Australian fauna. The work includes at least one field trip to familiarise students with vertebrates of the Sydney region, and the techniques used to observe, capture, handle, identify and study them.

Marine Biology module (MS)
Assoc. Prof. Hinde, Dr Hoegh-Guldberg, Dr Kingsford, Prof. Patterson

Qualifying: Biology 2001 or 2901 and 2002 or 2902 or Biology 2003 or 2903 and 2004 or 2904

Marine biological diversity is discussed with particular attention to the major types of marine habitats represented along the Australian coastline. Emphasis is placed on exposing students to the key ideas, researchers and methodologies within selected fields of marine biology. Students will develop skills in areas such as the identification of marine algae and the techniques used to study marine animals and plants. Discussion sessions will review major marine biological themes, laboratory sessions will develop hands-on experience with marine organisms, and field trips include one to Jervis Bay. If there is sufficient demand, classes on Protistology may be made available as alternatives to parts of this module.

Entomology
Staffing to be notified

Qualifying: 16 credit points of Intermediate Biology including any two of the following: Biology 2001, 2901, 2002, 2902, 2007

Classes: February Semester: 4 lec & 8 prac/wk

Assessment: core assessment plus one 1.5hr theory exam, prac exam

This module deals with the external and internal morphology of the major orders of insects. Lectures also cover the basic characteristics of each order of insects, their general life cycle and important pests or beneficial species. The biogeography and evolution of the insects, and some basic aspects of taxonomic theory are also dealt with. Practical classes deal with the classification of the class Insecta and students will be expected to key out insects to family level in the major orders only.

BIOL 3902   Evolution and Diversity of the Australian Biota (Advanced)
12 credit points
Dr M Henwood
Qualifying: Distinction average in 16 credit points of Intermediate Biology including BIOL 2001 or 2901 and 2002 or 2902 or Biology 2003 or 2903 and 2004 or 2904; or Biology 2001 or 2901 and 2002 or 2902 or 2007. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibition:** May not be counted with BIOL 3102. **Offered:** February.
Qualified students will participate in alternative components of the BIOL 3102 Evolution and Diversity of the Australian Biota. The content and nature of these components may vary from year to year.

BIOL 3202   Ecology (MS)
12 credit points
Dr Meats and other Biological Sciences staff
Qualifying: BIOL 2001 or 2901 and 2002 or 2902 or 16 credit points of Intermediate Biology, including BIOL 2004 or 2904. Some modules have specific prerequisites; consult list of modules; students are advised to consult the School. **Offered:** July. **Classes:** 4 lec & 8 prac/wk, one 8-day field trip in vacation before July Semester. Timetable 2.

Ecology Core (MS)
The core covers topics on theory, quantification and experimentation in ecology and analysis of patterns of distribution, abundance, dynamics, demography and life histories of natural populations. Multi-species interactions in animal communities are considered. An integrated part of the core is the application of ecological theory and methods to testing hypotheses and solving practical problems. The core is followed, after the first five weeks, by one of three modules: Marine Ecology, Terrestrial Ecology or Plant Ecology.

Marine Ecology module (MS)
Dr Kingsford

Qual Biology 2001 or 2901 and 2002 or 2902

Marine Ecology provides practical experience with quantitative sampling and experimental analysis of populations. The emphasis is on the logical structure of ecological investigations and on the design and analysis of sampling and experimental studies. The module also explores the relationships between theories, practical evidence and the solution to problems of pollution, environmental disturbance, conservation and management of exploited resources.

Terrestrial Ecology module
Dr Dickman, Dr Hochuli, Dr Meats

Qual Biology 2001 or 2901 and 2002 or 2902 or 16 credit points in Intermediate Biology including Biology 2004 or 2904

Terrestrial ecology considers the biology of organisms in terrestrial ecosystems and analysis of their distribution and abundance. Practical experience in quantitatively sampling vertebrates and invertebrates in the field and analysing these data are an important component of the module, as are research projects designed and carried out by students. Topics covered in lectures include ecology at the population level, food chains and ecosystems, harvesting and management, habitat selection, niche theory, competition, predation and biodiversity, and conservation issues. The module will investigate the relationships between ecology and the management of populations and communities for conservation and the managed exploitation of resources.

Plant Ecology module
DrWardle

Qual 16 credit points of Intermediate Biology including Biology 2004 or 2904

Plant Ecology integrates experimental studies, quantitative sampling and theoretical models to examine the ecological processes that produce complex interactions in natural populations. Students will gain first hand experience in field systems and will have the opportunity to undertake an individual research project. The appropriate use of statistical methods for analysing data will be emphasised. The lectures will include the following topics: plants as modular individuals, demography, life history variation, reproductive ecology, dispersal, dormancy, recruitment, effects of neighbours, plant animal interactions, natural selection, ecological genetics, vegetation structure and diversity, succession and gap phase regeneration. Examples will be given on the role of genetics, demography and population structure in the conservation and management of plants.

BIOL 3922   Ecology (Advanced)
12 credit points
Coordinator: Dr A Meats
Qualifying: Distinction average in 16 credit points of Intermediate Biology including BIOL 2001 or 2901 and 2002 or 2902 or 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 UnitExecutive Officer. **Prohibition:** May not be counted with BIOL 3202. **Offered:** July. **Classes:** 4hrs lees, 4hrs pracs, 1 tute/wk + field trip. **Assessment:** 2 x 2hr exams, project reports, and practical reports.

Qualified students will participate in alternative components of the BIOL 3202 Ecology. The content and nature of these components may vary from year to year.

BIOL 3103   Molecular Genetics and Recombinant DNATechnology

12 credit points
Dr Lyon, Dr Raphael, Prof. Skurray and others
Qualifying: 16 credit points of Intermediate Biology including BIOL 2005 or 2905 (For BMedSc students BIOL 2005 or 2905).
Prohibition: May not be counted with BIOL 3903. **Offered:** February. **Classes:** 4 lec & 8 prac/wk. Timetable 3. **Assessment:** One 3hr exam, one 1.5hr prac exam, prac reports, seminar, project.
A unit of study of lectures, seminars, practicals and tutorials on molecular genetics and its application to the genetic manipulation of both prokaryotic and eukaiyotic organisms. Lectures cover gene isolation, characterisation and manipulation, eukaiyotic gene organisation, regulation and expression, the molecular basis of immune diversity, monoclonal antibody technology and antibody engineering, and the use of molecular genetic techniques in systematics and ecology. The application of molecular genetics in biotechnology is covered in lectures on the cloning and expression of foreign genes in bacteria, yeast, animal and plant cells, novel human and animal therapeutics and vaccines including human gene therapy, new diagnostic techniques for human and veterinary disease, the transformation of animal and plant cells and the genetic engineering of animals and plants, and the release of genetically-modified organisms into the environment. Practical work may include the use of molecular techniques for DNA isolation, digestion, electrophoresis, cloning and PCR amplification, DNA sequencing and computer analysis of gene sequences, and immuno-detection of proteins. The current uses and potential impact of bioinformatics in scientific research and development are supported by opportunities for students to access and search biological databases on the network.
Textbooks
Watson J D, Gilman M, Witkowski J, & Zoller M. Recombinant DNA (2nd Ed.). Freeman, 1992.

BIOL 3903   Molecular Genetics and Recombinant DNATechnology (Advanced)

12 credit points
Dr B Lyon
Qualifying: Distinction average in 16 credit points of Intermediate Biology including BIOL 2005 or 2905. (For BMedSc students: Distinction in BIOL 2005 or 2905.) These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibition:** May not be counted with BIOL 3103. **Offered:** February.

Qualified students will participate in alternative components of the BIOL 3103 Molecular Genetics and Recombinant DNA Technology. The content and nature of these components may vary from year to year.

BIOL 3203   Eukaryotic Genetics and Development

12 credit points
Dr Oldroyd, Assoc. Prof. Gillies, Dr Raphael, Assoc. Prof. Armati and others
Qualifying: 16 credit points of Intermediate Biology including BIOL 2005 or 2905 (For BMedSc students BIOL 2005 or 2905).
Prohibition: May not be counted with BIOL 3904 or 3905. **Offered:** July. **Classes:** 4 lec & 8 prac/wk. **Assessment:** One 3hr exam, prac reports, seminars.
A series of lectures, seminars and practicals which concentrates on the application of molecular genetics to the understanding of eukaryotic genetics, animal development and differentiation, and evolutionary and population biology. Lectures cover molecular and ultrastructural arrangement of DNA sequences and genes in eukaryotic genomes and chromosomes, eukaryotic gene organisation and expression, forensic and behavioural genetics, linkage and mapping, genetics of early animal development, nerve cell differentiation and growth, MHC function and the recognition of self, sequence evolution, population and evolutionary genetics. Practical work provides experience with a range of molecular, cytological and genetical skills while illustrating theoretical principles.

BIOL 3904   Eukaryotic Genetics and Development (Advanced)

12 credit points
Dr B Oldroyd
Qualifying: Distinction average in 16 credit points of Intermediate Biology including BIOL 2005 or 2905. (For BMedSc students: Distinction in BIOL 2005 or 2905) These requirements may be varied and students with lower averages should consult the Unit Executive Officer. **Prohibition:** May not be counted with BIOL 3203 or 3905. **Offered:** July. **Classes:** 4 lec &8 prac/wk & one 2 day excursion. **Assessment:** One 3hr exam, prac reports, seminars, projects.
Qualified students will participate in alternative components of BIOL 3203 Eukaryotic Genetics and Development. The content and nature of these components may vary from year to year.

Biology Honours

Dr C R Dickman
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 (Room 234 Macleay Building A12).

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.
 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)

Dr C R Dickman
Offered: February, July.
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 (Room 234, Macleay Building A12).

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

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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
Dr A Meats

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 (Room 234, Macleay Building A12) or on the School's website at: http://www.bio.usyd.edu.au/SOBS/

Department of Cell Pathology

Prerequisites for these units of study are set out in Chapter 3. Students interested in Cell Pathology are expected to meet with Professor Hunt or Dr King before enrolling, preferably during the preceding year. The Department can cater only for a small number of students in CPAT 3001 and superior performance in Junior and Intermediate units of study will be essential to ensure success in these units. The Department of Pathology is located on Level 5 of the Blackburn Building (phone 9351 2414).

CPAT 3001 Cell Pathology A
12 credit points
Prof. Hunt, Dr Gibbins, Dr Hambly, Dr King
Prerequisite: ANAT 2002 or BCHM 2002 or 2902, or BIOL 2005 or 2006 or 2905 or 2906, or both PCOL 2001 and 2002, or PHSI 2002 (For BMedSc, BMED 2101 and 2102). **Offered:** February. **Classes:** 1 tut & 11 prac/wk. **Assessment:** One 2.15hr exam, 4 prac reports.
NB: Students must contact the Department before enrolling. Only a small number of students can be accommodated in the laboratory facilities.
The unit of study Cell Pathology is particularly suited to those interested in subsequently doing research in a challenging area of biology. This unit of study will provide students with insight into alterations in cellular processes in disease and injury and equip them to apply the concepts and methods of cell biology to the study of pathology. Subjects studied include inflammation, immunopathology, cellular immunology, molecular pathophysiology and cancer biology. This unit of study would not be useful for those wishing to pursue a career in diagnostic pathology.

Tutorials and directed reading will cover the general principles of pathology, emphasising the physiological, biochemical and genetic aspects and correlation of disturbed cell function with structural and ultrastructural changes.

Laboratory work is designed to illustrate particular aspects of pathology. A range of methods that will help in later development of this area will be used. These include flow cytometry, tissue culture, molecular biology and microscopy.

Note: Students must contact the Department before enrolling. Only a small number of students can be accommodated in the laboratory facilities.

CPAT 3101 Pathological Basis of Human Disease
12 credit points
Prof. Hunt, Dr Gibbins, Dr Hambly, Dr King
Qualifying: ANAT 2001; or BCHM 2001 or 2002 or 2101 or 2102 or 2901 or 2902; or BIOL 2001 or 2002 or 2005 or 2006 or 2101 or 2102 or 2105 or 2106 or 2901 or 2902 or 2905 or 2906; or HPSC 2001 or 2002; or MICR 2001 or 2003 or 2901; or PCOL 2001; or PHSI 2001 (For BMedSc: BMED 2101 and 2102). **Offered:** July. **Classes:** 3hr lec, 6 hrs self directed learning or museum sessions, & 3 hr microscopic specimen prac class/wk (Total 12 hrs/wk). **Assessment:** Essay (10%), Theory exam (60%), Practical exam (30%).
The Pathological Basis of Human Disease unit of study requires a minimum of one semester of study. The 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 as well as optical and confocal microscopy. 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

School of Chemistry
Chemistry Junior units of study
Dr J James

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 IA
CHEM 1002 Fundamentals of Chemistry IB
CHEM 1101 Chemistry IA
CHEM 1102 Chemistry IB
CHEM 1901 Chemistry IA (Advanced)
CHEM 1902 Chemistry IB (Advanced)
CHEM 1903 Chemistry IA (Special Studies Program)
CHEM 1904 Chemistry IB (Special Studies Program)

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
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. **Prohibition:** May not be counted with CHEM 1101 or 1901 or 1903. **Offered:** February. **Classes:** 3 lec & 1 tut/wk & 3hrs prac/wk for 10 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.
The aim of the unit of study is to provide those students whose chemical background is weak (or non-existent) with a good grounding in fundamental chemical principles together with an overview of the relevance of chemistry. There is no prerequisite or assumed knowledge for entry to this unit of study.

Lectures: A series of about 39 lectures, three per week throughout the semester.
Practical: A series of 10 three-hour laboratory sessions, one per week for 10 weeks of the semester.
Textbooks
A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1002 Fundamentals of Chemistry 1B
6 credit points
Prerequisite: CHEM 1001 or equivalent. **Prohibition:** May not be counted with CHEM 1102 or 1902 or 1904. **Offered:** July. **Classes:** 3 lec & 1 tut/wk & 3hrs prac/wk for 10 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.
Chemistry 1002 builds on Chemistry 1001 to provide a sound coverage of inorganic and organic chemistry.
Lectures: A series of about 39 lectures, three per week throughout the semester.
Practical: A series of 10 three-hour laboratory sessions, one per week for 10 weeks of the semester.
Textbooks
A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1101 Chemistry 1A
6 credit points
Corequisite: Recommended concurrent unit of study: Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. **Assumed knowledge:** HSC Mathematics 2 unit course; and the Chemistry component of the 4-unit or 3-unit HSC Science course, or 2-unit Chemistry. **Prohibition:** May not be counted with CHEM 1001 or 1901 or 1903. **Offered:** February, July. **Classes:** 3 lec & 1 tut/wk & 3hrs prac/wk for 10 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.
Chemistry IA is built on a satisfactory prior knowledge of the chemistry component of the 4-unit or 3-unit HSC Science course or 2-unit Chemistry. A brief revision of basic concepts of the high school course is given. Chemistry IA covers chemical theory and physical chemistry.
Lectures: A series of about 39 lectures, three per week throughout the semester.
Practical: A series of 10 three-hour laboratory sessions, one per week for 10 weeks of the semester.
Textbooks
A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1102 Chemistry 1B
6 credit points
Qualifying: CHEM 1101 or a Distinction in CHEM 1001 or equivalent. **Corequisite:** Recommended concurrent unit of study: Preferred - MATH 1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904; otherwise - MATH 1004 and 1005 or 1013 and 1015. **Prohibition:** May not be counted with CHEM 1002 or 1902 or 1904. **Offered:** February, July. **Classes:** 3 lec & 1 tut/wk & 3hrs prac/wk for 10 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.
Chemistry IB is built on a satisfactory prior knowledge of Chemistry IA and covers inorganic and organic chemistry. Chemistry IB is an acceptable prerequisite for entry into Intermediate Chemistry units of study.
Lectures: A series of about 39 lectures, three per week throughout the semester.
Practical: A series of 10 three-hour laboratory sessions, one per week for 10 weeks of the semester.
Textbooks
A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from tie School.

CHEM 1901 Chemistry 1A (Advanced)
6 credit points
Prerequisite: UAI of at least 92.5 and at least 75% in HSC 2-unit Chemistry or equivalent; by invitation. **Corequisite:** Recommended concurrent unit of study: Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. **Prohibition:** May not be counted with CHEM 1001 or 1101 or 1903. **Offered:** February.

Classes: 3 lec & 1 tut/wk & 3hrs prac/wk for 10 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.
Chemistry IA (Advanced) is available to students with a very good HSC performance (typically a UAI of 92.5+) as well as a very good school record in chemistry or science. Students in these categories are expected to do Chemistry IA (Advanced) rather than Chemistry IA.
The theory and practical work syllabuses for Chemistry IA and Chemistry IA (Advanced) are very similar, though the level of treatment in the latter unit of study is more advanced, presupposing a very good grounding in the subject at secondary level. Chemistry IA (Advanced) covers chemical theory and physical chemistry.
Lectures: A series of about 39 lectures, three per week throughout the semester.
Practical: A series of 10 three-hour laboratory sessions, one per week for 10 weeks of the semester.
Textbooks
A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1902 Chemistry 1B (Advanced)
6 credit points
Qualifying: CHEM 1901 or 1903 or Distinction in CHEM 1101 or equivalent; by invitation. **Corequisite:** Recommended concurrent unit of study: Preferred - MATH 1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904, otherwise - MATH 1013 and 1015 or 1004 and 1005. **Prohibition:** May not be counted with CHEM 1002 or 1102 or 1904. **Offered:** July. **Classes:** 3 lec & 1 tut/wk & 3hrs prac/wk for 10 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.
Chemistry IB (Advanced) is built on a satisfactory prior knowledge of Chemistry IA (Advanced) and covers inorganic and organic chemistry. Chemistry IB (Advanced) is an acceptable prerequisite for entry into Intermediate Chemistry units of study.
Lectures: A series of about 39 lectures, three per week throughout the semester.
Practical: A series of 10 three-hour laboratory sessions, one per week for 10 weeks of the semester.
Textbooks
A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1903 Chemistry 1A (Special Studies Program)
6 credit points
Prerequisite: UAI of at least 98.7 and at least 85% in HSC 2-unit Chemistry or equivalent. Entry is by invitation. **Corequisite:** Recommended concurrent unit of study: Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. Students in the Faculty of Science Talented Students Program are automatically eligible. For the purpose of Resolution 11 this unit of study is deemed to be designated as an Advanced unit of study. **Prohibition:** May not be counted with CHEM 1001 or 1101 or 1901. **Offered:** February. **Classes:** 3 lec & 1 tut/wk & 3hrs prac/wk.
Entry to Chemistry IA (Special Studies Program) is restricted to students with a UAI of 98.7 and an excellent school record in chemistry or science. The practical work syllabus for Chemistry IA (Special Studies Program) is very different from that for Chemistry IA and Chemistry IA (Advanced) and consists of special project-based laboratory exercises. All other unit of study details are the same as those for Chemistry IA (Advanced).
A Distinction in Chemistry IA (Special Studies Program) is an acceptable prerequisite for entry into Chemistry IB (Special Studies Program).

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CHEM 1904 Chemistry 1B (Special Studies Program)
6 credit points
Prerequisite: Distinction in CHEM 1903; by invitation. Corequisite: Recommended concurrent unit of study: Preferred - MATH 1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904; otherwise - MATH 1013 and 1015 or 1004 and 1005. Prohibition: May not be counted with CHEM 1002 or 1102 or 1902. Offered: July. Classes: 3 lec & 1 tut/wk & 3hrs prac/wk.

Entry to Chemistry IB (Special Studies Program) is restricted to students who have gained a Distinction in Chemistry IA (Special Studies Program). The practical work syllabus for Chemistry IB (Special Studies Program) is very different from that for Chemistry IB and Chemistry IB (Advanced) and consists of special project-based laboratory exercises. All other unit of study details are the same as those for Chemistry IB (Advanced).

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

Chemistry Intermediate units of study
Assoc Prof G G Warr

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 2001 Chemistry 2 (Life Sciences), 8 credit points
CHEM 2101 Chemistry 2 (Environmental), 8 credit points
CHEM 2301 Chemistry 2A, 8 credit points
CHEM 2302 Chemistry 2B, 8 credit points
CHEM 2502 Chemistry 2 (Forensic), 8 credit points
CHEM 2902 Chemistry 2A (Advanced), 8 credit points
CHEM 2902 Chemistry 2B (Advanced), 8 credit points

The units of study Chemistry 2001 (Life Sciences), 2101 (Environmental), and 2502 (Forensic) share a common core, which consists of approximately 36 lectures on: Principles of Modern Chemical Analysis, Chemical Speciation, Quantum Mechanics, Spectroscopy, Bonding and Organic Chemistry.

A fully detailed booklet on the units of study including textbooks is available from the School of Chemistry.

CHEM 2001 Chemistry 2 (Life Sciences)
8 credit points
Qualifying: CHEM 1102 or 1902 or 1904 or 1909. **Prerequisite:** 6 credit points of Junior Mathematics. **Prohibition:** May not be counted with CHEM 2101 or 2301 or 2502 or 2901. **Offered:** February. **Classes:** 4 lec & 4hr prac/wk. **Assessment:** Exam (67%), lab exercises (33%).

Lectures and tutorials: In addition to the core, the remaining 20 lectures are distinct for this unit of study and apply the core knowledge to chemical problems in Life Sciences. Areas covered include: structure and thermodynamics of biomolecules and biomaterials, and biological organic chemistry. Non-compulsory tutorials will also be provided at a rate of one per week.

Additional information: The aim of this unit of study is to provide students interested in life sciences with the chemical knowledge required for an understanding of the subject.
Practical: Practical work entails 4 hours per week for 14 weeks during the semester. Students must ensure that one complete afternoon from 1pm to 5pm, free from other commitments, is available for this practical work.

CHEM 2101 Chemistry 2 (Environmental)
8 credit points
Qualifying: CHEM 1102 or 1902 or 1904 or 1909. **Prerequisite:** 6 credit points of Junior Mathematics. **Prohibition:** May not be counted with CHEM 2001 or 2301 or 2502 or 2901. **Offered:** February. **Classes:** 4 lec & 4hr prac/wk. **Assessment:** Exam (67%), lab exercises (33%).

Lectures: In addition to the core, the remaining 20 lectures are distinct for this unit of study and apply the core knowledge to chemical problems in Environmental Science.

Additional information: The aim of this unit of study is to provide students interested in environmental science with the chemical knowledge required for an understanding of the area.
Practical: As for CHEM 2001.

CHEM 2301 Chemistry 2A
8 credit points
Qualifying: CHEM 1102 or 1902 or 1904 or 1909. **Prerequisite:** 6 credit points of Junior Mathematics. **Prohibition:** May not be counted with CHEM 2001 or 2101 or 2502 or 2901. **Offered:** February, July. **Classes:** 4 lec & 4hr prac/wk. **Assessment:** Exam (67%), lab exercises (33%).

Lectures and tutorials: A series of 18 lectures in inorganic chemistry, 18 lectures in organic chemistry and 18 lectures in physical/theoretical chemistry. Non-compulsory tutorials will also be provided at a rate of one per week.

Additional information: This is the main chemistry unit of study for students expecting to major in chemistry.
Practical: As for CHEM 2001.

CHEM 2302 Chemistry 2B
8 credit points
Prerequisite: CHEM 2001 or 2101 or 2301 or 2502 or 2901. **Prohibition:** May not be counted with CHEM 2202 or 2902. **Offered:** February, July. **Classes:** 4 lec & 4hr prac/wk. **Assessment:** Exam (67%), lab exercises (33%).

Lectures: This unit of study consists of 18 lectures in which the structure, bonding and properties of inorganic compounds and complexes will be presented; 18 lectures of physical chemistry on statistical thermodynamics and thermodynamics; and 18 lectures in organic chemistry which will include 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.
Practical: As for CHEM 2001.

CHEM 2502 Chemistry 2 (Forensic)
8 credit points
Qualifying: CHEM 1102 or 1902 or 1904 or 1909. **Prerequisite:** 6 credit points of Junior Mathematics. **Prohibition:** May not be counted with CHEM 2001 or 2101 or 2301 or 2901. **Offered:** February. **Classes:** 4 lec & 4hr prac/wk. **Assessment:** Exam (67%), lab exercises (33%).

Lectures: In addition to the core, the remaining 20 lectures are distinct for this unit of study and apply the core knowledge to chemical problems in Forensic Science. This unit of study is available in both the February and July semesters

Additional information: The aim of this unit of study is to provide students interested in forensic science with the chemical knowledge required for an understanding of the area.
Practical: As for CHEM 2001.

CHEM 2901 Chemistry 2A (Advanced)
8 credit points
Qualifying: WAM greater than 80 and Distinction average in CHEM 1101 or 1901 or 1903 and in Chemistry 1102 or 1902 or 1904 or 1909. Prerequisite: 6 credit points of Junior Mathematics; by invitation. Prohibition: May not be counted with CHEM 2001 or 2101 or 2301 or 2502. Offered: February. Classes: 5 lec & 3hr prac/wk. Assessment: Exam (67%), lab exercises (33%).
NB: Entry to this unit of study is by invitation. Students in the Faculty of Science Talented Students Program are automatically eligible.
Lectures and tutorials: Lectures and tutorials in Chemistry 2901 (Advanced) comprise two sets: Four lectures per week in common with any other Intermediate Chemistry unit of study and one lecture per week of advanced lectures on topics that are complementary to the other units of study.

Additional information: The number of places in Chemistry 2901 (Advanced) is limited. Applications are invited from students with a high WAM and an excellent record in a Junior Chemistry unit of study. Places are restricted to students enrolled in the Faculty of Science except by permission of the Head of the School of Chemistry. Students in the Faculty of Science Talented Student Program who are enrolled in the BSc or BSc(Adv) degree are automatically eligible. Students enrolled in other Advanced degree programs within the Faculty are not normally admitted because of timetabling.

Note: Entry to this unit of study is by invitation. Students in the Faculty of Science Talented Students Program are automatically eligible.

Practical: Practical work entails 3 hours per week during the semester. For 8 weeks students take practical exercises in common with any other Intermediate Chemistry unit of study; for 6 weeks special advanced project-oriented exercises are offered.

CHEM 2902 Chemistry 2B (Advanced)
8 credit points
Prerequisite: CHEM 2901, but see unit description; by invitation.
Prohibition: May not be counted with CHEM 2202 or 2302.
Offered: July. **Classes:** 5 lec & 3hr prac/wk. **Assessment:** Exam (67%), lab exercises (33%).

Lectures and tutorials: Lectures and tutorials in Chemistry 2902 (Advanced) comprise two sets: 4 lectures and 1 tutorial per week in common with any other Intermediate Chemistry unit of study; and 1 lecture per week of advanced lectures on topics that are complementary to the other units of study.

Additional information: The number of places in Chemistry 2902 (Advanced) is limited. Normally entry to this unit of study is restricted to those students enrolled in Chemistry 2901. However, a student who has performed particularly well in another February semester Chemistry unit of study may be invited by the Head of School to enrol in Chemistry 2902 (Advanced). See the Intermediate Chemistry Unit of Study Coordinator for further information.

Practical: Practical work entails 3 hours per week during the semester. For 10 weeks, students take practical exercises in common with any other Intermediate Chemistry unit of study; for 4 weeks, special advanced project-oriented exercises are offered.

Chemistry Senior units of study
Associate Professor TW Hambley
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 3101 Chemistry 3A, 12 credit points
  CHEM 3102 Chemistry 3B, 12 credit points
  CHEM 3901 Chemistry 3A (Advanced), 12 credit points
  CHEM 3902 Chemistry 3B (Advanced), 12 credit points
  CHEM 3201 Chemistry 3A Additional, 12 credit points
  CHEM 3202 Chemistry 3B Additional, 12 credit points

Advice on units of study

A fully detailed information booklet on the units of study and textbooks is available from the School of Chemistry. All students who intend to take Senior Chemistry units of study must register in the School of Chemistry during either the Wednesday or Thursday of the orientation period. Registration includes selection of Senior Chemistry modules, completion of a registration card and the taking of an I.D. photograph.
Textbooks
See the Senior Chemistry handbook available from the School of
  Chemistry

CHEM 3101 Chemistry 3A
12 credit points
Qualifying: CHEM 2202 or 2302 or 2902. **Prohibition:** May not be counted with CHEM 3901 (but may be counted with CHEM 3201).
Offered: February. **Classes:** 4 lec & 8hr prac/wk. **Assessment:** 90min exam per module and prac assessment.
The lectures will be presented in modules (each module runs for a semester and comprises 13 lectures). A provisional listing of the module titles available in the February Semester is given below. There are some restrictions on the number of modules that a student can take from each area. Further details can be obtained from the Senior Chemistry Handbook available from the School.
Inorganic Chemistry
• 3I1F Transition Metal Chemistry and Inorganic Reaction Mechanisms
• 3I2F Biological, Environmental and Industrial Chemistry of the Main Group
• 3I3F Organometallic Chemistry and Catalysis

Organic Chemistry
• 301F Spectroscopic Identification of Organic Compounds
• 302F Stereochemistry and Mechanism
• 304F Bioorganic Chemistry
• 306F Radicals and Pericyclics
Physical/Theoretical Chemistry
• 3PT1F Quantum Chemistry
• 3PT4F Atmospheric and Photochemistry
• 3PT6F Polymers
• 3PT7F Surfaces and Colloids
  There may be some interchange of modules between CHEM 3101 and CHEM 3102. As well, some modules may not be offered.
Practical: Practical work (8 hours/week) comprises sessions in the inorganic, organic and physical chemistry laboratories. Details can be obtained from the School of Chemistry.
Textbooks
See the Senior Chemistry handbook available from the School of
  Chemistry.

CHEM 3102 Chemistry 3B
12 credit points
Qualifying: CHEM 2202 or 2302 or 2902. **Prohibition:** May not be counted with CHEM 3902 (but may be counted with CHEM 3202).
Offered: July. **Classes:** 4 lec & 8 hr prac/ wk. **Assessment:** 90min exam per module and prac assessment.
The lectures will be presented in modules (each module runs for a semester and comprises 13 lectures). A provisional listing of the module titles available in the July Semester is given below. There are some restrictions on the number of modules that a student can take from each area. Further details can be obtained from the Senior Chemistry Handbook available from the School.
Inorganic Chemistry
• 3I4J Biological and Environmental Chemistry of the D-Block Elements
• 3I5J Inorganic Materials Chemistry
• 3I6J Inorganic and Biological Spectroscopy
Organic Chemistry
• 303J Heterocyclic Chemistry
• 305J Medicinal and Biological Chemistry
• 307J Synthetic Methods (organic synthesis/organometalhcs)
• 308J NMR Spectroscopy
Physical/Theoretical Chemistry
• 3PT2J Molecular Spectroscopy
• 3PT3J Chemical Dynamics
• 3PT5J Biophysical Chemistry
• 3PT8 J Physical Chemistry of Materials
Cross-Divisional
• 3C1J Supramolecular Chemistry
  There may be some interchange of modules between Chemistry 3101 and Chemistry 3102. As well, some modules may not be offered.
Practical: As for CHEM 3101, but the last seven week compromise a workshop in one of the divisions.
Textbooks
See the Senior Chemistry handbook available from the School of
  Chemistry
CHEM 3901 Chemistry 3A (Advanced)
12 credit points
Qualifying: Distinction average in CHEM 2001 or 2101 or 2301 or 2901 and in CHEM 2202 or 2302 or 2902; by invitation. **Prohibition:** May not be counted with CHEM 3101 (but may be counted with CHEM 3201). **Offered:** February. **Classes:** 5 lec & 8hr prac/wk. **Assessment:** As for CHEM 3101, plus a report on each Advanced module. Only the marks for the best 4 out of the total of 5 modules assessed contribute to a student's final mark.
NB: The number of places in this unit of study is limited and entry is by invitation. Applications are invited from students with a high WAM and an excellent record in Intermediate Chemistry. Students in the Faculty of Science Talented Student Program are automatically eligible.
Lectures: The requirements for CHEM 3901 are identical with those for CHEM 3101, with the addition of a special module that is available only to Advanced students. This special module

involves an inquiry into a major problem in contemporary chemistry. A member of staff guides the discussion and acts as a consultant.

Advanced topics offered in February semester 1999 were:
Green Chemistry. How far should we go?
Counting on chiral drugs
Practical: As for CHEM 3101.
Textbooks
See the Senior Chemistry handbook available from the School of Chemistry

CHEM 3902 Chemistry 3B (Advanced)
12 credit points
Qualifying: Distinction or better in CHEM 2902 or 3101 or 3901; by invitation. **Prohibition:** May not be counted with CHEM 3102.
Offered: July. **Classes:** 5.5 lec & 8hr prac/wk. **Assessment:** As for CHEM 3B, plus a report on each Advanced module. Only the marks for the best 4 out of the total of 5 modules assessed contribute to a student's final mark.
NB: The number of places in this unit of study is limited and entry is by invitation. Students in the Faculty of Science Talented Student Program are automatically eligible.
Lectures: The requirements for Chemistry 3B (Advanced) are identical with those for Chemistry 3B, with the addition of a special module that is available only to Advanced students. This special module involves an inquiry into a major problem in contemporary chemistry. A member of staff guides the discussion and acts as a consultant. Advanced topics offered in July semester 1999 were:

Deconstruction of common materials
Climate chemistry: Exercises in modelling
Practical: As for CHEM 3101.
Textbooks
See the Senior Chemistry handbook available from the School of Chemistry

CHEM 3201 **Chemistry 3A Additional**
12 credit points
Qualifying: CHEM 2202 or 2302 or 2902. **Prerequisite:** or Coreq CHEM 3101 or 3901. **Offered:** February. **Classes:** 4 lec & 8hr prac/wk. **Assessment:** 90min exam per module and prac assessment.
Students taking this unit of study must be concurrently enrolled in or have previously completed either CHEM 3101 or CHEM 3901. The modules will be chosen from the modules listed for CHEM 3101 and the same selection rules as applicable to CHEM 3101 will apply to the selection of the additional 4 modules. Students cannot take modules already counted towards CHEM 3101 or 3102 or 3901 or 3902 or 3202.
Practical: As for CHEM 3101.
Textbooks
See the Senior Chemistry handbook available from the School of Chemistry

CHEM 3202 Chemistry 3B Additional
12 credit points
Qualifying: CHEM 2202 or 2302 or 2902. **Prerequisite:** or Coreq CHEM 3102 or 3902. **Offered:** July. **Classes:** 4 lec & 8hr prac)/wk.
Assessment: 90min exam per module and prac assessment.
Students taking this unit of study must be concurrently enrolled in or have previously completed either CHEM 3102 or CHEM 3902. The modules will be chosen from the modules hsted for CHEM 3102 and the same selection rules as applicable to CHEM 3102 will apply to the selection of the additional 4 modules. Students cannot take modules already counted towards CHEM 3101 or 3102 or 3201 or 3901 or 3902.
Practical: As for CHEM 3101, but the last seven weeks comprise a workshop in one of the Divisions.
Textbooks
See the Senior Chemistry handbook available from the School of Chemistry

Chemistry Honours
Assoc Prof M M Harding
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 the areas of Inorganic Chemistry, Organic Chemistry, Physical Chemistry or Theoretical Chemistry. Details of available projects are contained in the School's Honours Booklet that is available from the School's Information Desk. In the Honours year, each student undertakes a research project under the supervision of a member of staff; writes a thesis which explains the problem, outlines the research undertaken and the results obtained; attends advanced lecture courses, normally given by leaders in their field from overseas or Australia; attends research seminars and undertakes additional written assessment. Further information is available from the Honours Coordinator or from the Administrative Officer (Academic).

Basser Department of Computer Science

The Basser Department of Computer Science Administers the disciplines of Information Systems and Computer Science
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.

The diversity of the discipline is demonstrated by current research interests in the Department which include biomedical image processing, parallel and distributed computing, databases, user-adaptive systems and algorithms. The Department has a range of computers and specialised laboratories for its teaching and research.

Note that units of study beginning with both COMP 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 who intend to major in Computer Science should pay particular attention to the prerequisites of each unit of study. Students who complete 16 credit points of Intermediate units of study (unit of study numbers starting with the digit '2') and 24 credit points of Senior units of study (unit of study numbers starting with the digit '3'), including among them a 'project unit of study' (unit of study numbers starting with the digits '32' and COMP 3809), are eligible to become Associate Members of the Australian Computer Society.

Intending Honours students are strongly urged to complete some Senior Mathematics prior to their entry into the Honours year. Students should note that entry to Honours requires an average of Credit or better in the Senior Computer Science 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 making computer systems work for people and hence people are the focus of attention, whereas much of Computer Science is about developing and improving the performance of computers. The Department performs IS research in a number of areas including natural language processing, data mining, systems methodologies and Workflow methods. Students who

wish to complete a major in Information Systems need to appreciate that effective communication and critical anlaysis 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 last 16 credit points of Information systems units at Senior level. Note that units beginning with both IS YS and INFO codes (but not COMP) can be counted as Information systems units.

Other information

The units of study offered by the Department are described briefly below, and more fully in the Department's Handbook which is available from the Department Office (Room G71) in the Madsen Building. Students should confirm details of units of study, registration procedures, textbooks, etc., on the Departmental noticeboards. Those in doubt should seek advice from members of the Department's academic staff.

COMP 1001 Introductory Programming
6 credit points
Corequisite: Students intending to major in Computer Science are advised to enrol in MATH 1003 and 1004 or 1004 and 1005 or 1903 and 1904 or 1904 and 1905 in their first year. **Assumed knowledge:** HSC 3-unit Mathematics. **Prohibition:** May not be counted with COMP 1901. **Offered:** February, July. **Classes:** 3 lec, 1 tut & 2 prac/wk. **Assessment:** Assessment assignments, written exam, prac exam.

This unit of study introduces the fundamental skill that underlines all of Computer Science: computer programming. Using the Blue object-oriented programming language, students learn modern programming techniques based on recent developments in the subject. No previous knowledge of computers or programming is assumed.

COMP 1901 Introductory Programming (Advanced)
6 credit points
Assumed knowledge: HSC 3-unit Mathematics (Requires permission by the Head of Department). **Prohibition:** May not be counted with COMP 1001. **Offered:** February, July. **Classes:** 3 lec, 1 tut & 2 prac/wk. **Assessment:** Assessment assignments, written exam, prac exam.

This unit of study is the advanced alternative to COMP 1001. While the subject matter is the same, a higher degree of elegance and rigour in programming is expected, and the programming problems are more challenging, although not more time consuming. No previous knowledge of computers or programming is assumed.

COMP 1002 Introductory Computer Science
6 credit points
Prerequisite: COMP 1001 or 1901. **Prohibition:** May not be counted with COMP 1902. **Offered:** February, July. **Classes:** 3 lec, 1 tut & 2 prac/wk. **Assessment:** Assessment assignments, written exam, prac exam.

This unit of study is a continuation of COMP 1001. Advanced features of the programming language Blue are presented, and a beginning is made on some topics from the wider field of Computer Science, such as parsing and reasoning about the correctness and efficiency of computer programs.

COMP 1902 Introductory Computer Science (Advanced)
6 credit points
Prerequisite: Distinction in COMP 1901 or 1001. **Prohibition:** May not be counted with COMP 1002. **Offered:** February, July. **Classes:** 3 lec, 1 tut & 2 prac/wk. **Assessment:** Assessment assignments, written exam, prac exam.

This unit of study is the advanced alternative to COMP 1002. While the subject matter is the same, a higher degree of elegance and rigour in programming is expected, the programming problems are more challenging although not more time consuming, and a deeper approach is taken to the Computer Science topics.

INFO 1000 Information Technology Tools
6 credit points
Offered: February, July. **Classes:** 1 lec, 1 tut & 4 prac/wk. Assessment: Assignments, written exam, prac exam.

A critical study of common computer applications (including word processors, spreadsheets, databases, image processing packages and web browsers). Emphasis will be given to acquiring a sophisticated level of skills in the usage of these tools. This will include: examining common concepts within and between classes of applications, the ability to transfer skills between releases and alternative packages, customisation and automation of environments, and the ability to design solutions to problems and use a tool to implement that solution. A central focus of this unit of study will be the application of critical <u>thinking</u> to the problems of tool use, including the evaluation of tools and the selection of a suitable tool, and the evaluation of information produced by tools (including knowledge of common sources of error or misunderstanding, and ways to avoid them).

NOTE: Students intending to proceed to professional credentials in Computer Science should enrol in COMP 1001 in their first semester, and in COMP 1002 in their second semester. If they wish they may also enrol in COMP 1000.

Computer Science and Information Systems Intermediate units of study

COMP 2001 Computer Systems
4 credit points
Qualifying: COMP 1002 or 1902. **Prohibition:** May not be counted with COMP 2901. **Offered:** February. **Classes:** 2 lec, 2 prac/wk. **Assessment:** Assessment assignments, written exam.
NB: See prerequisites for Senior Computer Science writs of study. Consult Departmental Handbook.

An overview of the aspects of computer hardware that are important for understanding the function and performance of software. The unit of study consists of two principal components. Machine Principles: in this section we discuss the organisation of a computer central processing unit, CPU, and the assembly and machine language commands that control it. We also pay particular attention to the different data types supported, such as two's complement integers and floating point. System Structures: in this section we discuss the low-level organisation of system software including the organisation and action of a simple compiler and its run-time environment, and the system call and interrupt handling mechanisms. Performance estimation is a unifying theme. Throughout the unit of study, we emphasise generic skills such as report writing and transfer of concepts to new situations.

See prerequisites for Senior Computer Science units of study. Consult Departmental Handbook.

COMP 2901 Computer Systems (Advanced)
4 credit points
Qualifying: Distinction in COMP 1902 or 1002. **Prohibition:** May not be counted with COMP 2001. **Offered:** February. **Classes:** 2 lec, 2 prac)/wk. **Assessment:** Assessment assignments, written exam.
This unit of study is the advanced alternative to COMP 2001. Topics in Computer Systems are covered at an advanced and more challenging level.

COMP 2002 Design and Data Structures
4 credit points
Qualifying: COMP 1002 or 1902. **Prohibition:** May not be counted with COMP 2902. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assessment assignments, written exam.
NB: See prerequisites for Senior Computer Science units of study. Consult Departmental Handbook.
When there is a large amount of data, its structure (arrangement) determines what operations can be done with it efficiently. For example, the Sydney telephone directory may be used to find out a subscriber's telephone number, but not which subscriber has a given number. Many data structureshave been developed over the years, each suited to a particular set of operations. Object-oriented programmers often make use of class libraries which contain implementations of important data structures.

This unit of study is concerned with the most frequently used data structures, from both the view of a programmer who uses a library of collection classes, and also the programmer who writes the library. This unit of study covers the most frequently used data structures, including the array, linked list, binary tree, B-tree, hash table, heap, and adjacency lists. Particular attention is given to understanding the correctness and scalability of different structures. Examples will be in several languages including Java.

See prerequisites for Senior Computer Science units of study. Consult Departmental Handbook.

COMP 2902 Design and Data Structures (Advanced)
4 credit points
Qualifying: Distinction in COMP 1902 or 1002. **Prohibition:** May not be counted with COMP 2002. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assessment assignments, written exam.
This unit of study is the advanced alternative to COMP 2002. Topics in Data Structures are covered at an advanced and more challenging level.

COMP 2003 Languages and Logic
4 credit points
Qualifying: COMP 1002 or 1902. Prerequisite: MATH 1004 or 1904 or Econometrics or MATH 2009. Prohibition: May not be counted with COMP 2903. Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: Assessment assignments, written exam.
NB: See prerequisites for Senior Computer Science units of study. Consult Departmental Handbook.
All communication requires a language. People communicate with each other in a natural language such as English; they communicate with computers in a formal language such as Java. This unit of study looks at two important kinds of formal languages (called regular and context-free), and the algorithms, or automata, that are used to recognise them. On the theoretical side, several ways to represent languages are presented, and their capabilities and limitations discovered; on the practical side, sound and indeed foolproof methods are derived for writing programs to recognise formal languages such as Java. Considerable emphasis is also put on the use of logic (both propositional and first-order), which provides a powerful design tool for hardware implementations of automata.

See prerequisites for Senior Computer Science units of study. Consult Departmental Handbook.

COMP 2903 Languages and Logic (Advanced)
4 credit points
Qualifying: Distinction in COMP 1902 or 1002. **Prerequisite:** MATH 1004 or 1904 or Econometrics or MATH 2009. **Prohibition:** May not be counted with COMP 2003. **Offered:** July. **Classes:** 2 lec & 1 tutf wk. **Assessment:** Assessment assignments, written exam.
This unit of study is the advanced alternative to COMP 2003. Topics in Languages and Logic are covered at an advanced and more challenging level.

COMP 2004 Programming Practice
4 credit points
Qualifying: COMP 1002 or 1902. Prohibition: May not be counted with COMP 2904. Offered: July. Classes: 2 lec & 1 tut/wk.
Assessment: Assessment assignments, written exam.
NB: See prerequisites for Senior Computer Science units of study. Consult Departmental Handbook.
In this unit of study we attack the task of the programmer from an engineering viewpoint. This means that a major focus is on using existing tools as building blocks to complete a task. This unit of study will teach C++ programming, its idiom and its considerable array of powerful programming tools. In addition, students will study the implementation of some of the library tools so that they gain an appreciation of how much better these are than a typical programmer would be able to create. In addition, it will introduce students to some of the very elegant ideas from computer science that have been applied in the construction of the tools.

See prerequisites for Senior Computer Science units of study. Consult Departmental Handbook.

COMP 2904 Programming Practice (Advanced)
4 credit points
Qualifying: Distinction in COMP 1902 or 1002. **Prohibition:** May not be counted with COMP 2004. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assessment assignments, written exam.
This unit of study is the advanced alternative to COMP 2004. Topics in Programming Practice are covered at an advanced and more challenging level.

INFO 2000 System Analysis and Design
4 credit points
Qualifying: INFO 1000 or COMP 1000 or COMP 1001 or COMP 1901. **Prohibition:** May not be counted with COMP 2000. **Offered:** February. **Classes:** 2 lec and 1 tut or 1 prac /wk; 1 unscheduled lab work with a CASE tool. **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.

IN FO 2005 Personal Database Tools
4 credit points
Qualifying: INFO 1000 or COMP 1000 or COMP 1001 or COMP 1901. **Prohibition:** Not available to students who have completed COMP 3005 or 3905 or COMP 2005. **Offered:** July. **Classes:** 2 lec, 1 tut/wk; 1 unscheduled lab work. **Assessment:** Written and practical assignments + written exam.

The syllabus covers use of databases through forms and through SQL language; data representation and basic interfaces; good design of tables through normalisation. Use of a variety of data modelling techniques. A commercial strength PC based database system will be used to develop practical skills.

INFO 2007 Distributed Information Systems
4 credit points
Qualifying: INFO 1000 or COMP 1000 or COMP 1001 or COMP 1901. **Offered:** February. **Classes:** 2hr lec, 2 pracs & 1 seminar/wk. **Assessment:** One 3hr examination (70%), written assignments (30%).

This unit of study covers data communication and networking technologies including hardware and software. Emphasis is on analysis and design of networking solutions for organisations, management of telecommunications networks, cost-benefit analysis and evaluation of connectivity options. Students learn to evaluate, select and implement different communication options within an orgamsation. Major topics include telecommunication devices, media and systems, architectures, topologies and protocols, distributed versus centralized systems; installation and operation of bridges, routers and gateways; privacy security and reliability; monitoring networks, communication standards, internet and intranet.

ISYS 2006 Information Systems in Organisations
4 credit points
Qualifying: INFO 1000. **Offered:** July. **Classes:** 2hr lec & 1hr prac/wk. **Assessment:** One 3hr examination (70%), written assignments (30%).
NB: Not offered in 2000.

Computer Science and Information Systems Senior units of study
Students are advised that doing less than 6 Senior Computer Science units of study 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.

COMP 3001 Algorithms
4 credit points
Qualifying: COMP 2002 or 2902. **Prerequisite:** MATH 1004 or 1904 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. **Prohibition:** May not be counted with COMP 3901. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assessment assignments, written exam.

NB: Change to semester availability subject to Faculty approval.
Algorithms are particularly important in all areas of Computer Science. The knowledge of basic algorithms, as well as the ability to design a new algorithm and to analyse an existing one in terms of time and space efficiency, are essential for a person to successfully work in a computer and information related professional area. This unit of study will provide a systematic study of the analysis of existing algorithms and strategies for the design of new algorithms. The analysis skill includes the method of analysis of average computational complexity. The design strategies covered include divide-and-conquer, greedy method, and dynamic programming. Many interesting real-life problems and smart algorithm application examples will also be introduced.

COMP 3901 Algorithms (Advanced)

4 credit points
Qualifying: COMP 2002 or 2902. **Prerequisite:** 16 credit points of Intermediate or Senior Computer Science with Distinction average and MATH 1004 or 1904 and 8 credit points of Intermediate Mathematics and/or Statistics and/or Econometrics. **Prohibition:** May not be counted with COMP 3001. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Written and programming assignments; written exam.
NB: Change to semester availability subject to Faculty approval.
An advanced alternative to COMP 3001; covers material at an advanced and challenging level.

COMP 3002 Artificial Intelligence

4 credit points
Qualifying: COMP 2004 or 2904. Prerequisite: COMP 2003 or 2903 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. Prohibition: May not be counted with COMP 3902. Offered: February. Classes: 2 lec & 1 tut/wk. 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
Qualifying: COMP 2004 or 2904. **Prerequisite:** 16 credit points of Intermediate or Senior Computer Science with Distinction average and 8 credit points of Intermediate MATH and/or Statistics and/or Econometrics. **Prohibition:** May not be counted with COMP 3002. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Written and programming assignments; written exam.
An advanced alternative to COMP 3002; covers material at an advanced and challenging level.

COMP 3003 Computer Architecture

4 credit points
Qualifying: COMP 2001 or 2901. **Prerequisite:** COMP 2002 or 2902 and 2003 or 2903. **Prohibition:** May not be counted with COMP 3903. **Offered:** July. **Classes:** 2 lec, 1 tut & 2 prac/wk. **Assessment:** Assessment assignments, written exam.
NB: Not offered in 2000.
In this unit of study we design and build simple computers. A major focus of the unit of study is the series of Logic Laboratory workshop experiments. After a brief review of machine code programming students are familiarised with the basic modules from which a computer central processing unit can be assembled: arithmetic logic units, microprogram sequencers, read-only memory for microprograms, random access memory for programs and data, and various pieces of medium scale integration 'glue logic'. Another stream of lectures will be devoted to case studies of various computers emphasising their strengths

and weaknesses. Emphasis will be placed on performance enhancement by parallelism, pipelining, and similar techniques.

COMP 3903 Computer Architecture (Advanced)

4 credit points
Qualifying: COMP 2001 or 2901. **Prerequisite:** 16 credit points of Intermediate or Senior Computer Science with Distinction average and COMP 2002 or 2902 and 2003 or 2903. **Prohibition:** May not be counted with COMP 3003. **Offered:** July. **Classes:** 2 lec, 1 tut & prac/wk. **Assessment:** Written and programming assignments; written exam.
NB: Not offered in 2000.
An advanced alternative to COMP 3003; covers material at an advanced and challenging level.

COMP 3004 Computer Graphics

4 credit points
Qualifying: COMP 2004 or 2904. Prerequisite: COMP 2002 or 2902 and MATH 1002 or 1902 and 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. Prohibition: May not be counted with COMP 3904. Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: Assessment assignments, 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. The Computer Graphics unit of study examines established algorithms for picture generation, covering such topics as hidden-line elimination, shading and texturing, and ray-tracing in terms of the technology of standard graphical output devices and the 3-space geometry which applies. The effects on performance of algorithmic design choices are considered and connections are made with the cognate field of computational geometry. Typically in making pictures, a round ball is modelled by the unit sphere $r \times r = 1$ (after Pythagoras), and a point on a tumbling football by the affine transform $p = A.p' + T$, where A is a non-singular matrix, p' is a point on the unit sphere, and T is a translation vector. The unit of study therefore assumes an understanding of vector and matrix methods.

COMP 3904 Computer Graphics (Advanced)

4 credit points
Qualifying: COMP 2004 or 2904. **Prerequisite:** 16 credit points of Intermediate or Senior Computer Science with Distinction average and COMP 2002 or 2902 and MATH 1002 or 1902 and 8 credit points of Intermediate Mathematics and/or Statistics and/or Econometrics. **Prohibition:** May not be counted with COMP 3004. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Written and programming assignments; written exam.
An advanced alternative to COMP 3004; covers material at an advanced and challenging level.

COMP 3006 Declarative Programming Languages

4 credit points
Qualifying: COMP 2004 or 2904. **Prerequisite:** 8 credit points in Intermediate Mathematics and/or Statistics and/or Econometrics. **Prohibition:** May not be counted with COMP 3906. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assessment assignments, written exam.
What distinguishes Declarative Programming Languages is the way in which programmers specify the logic of a problem (what is to be done) rather than the mechanics of solving the problem (how to do it). It is this aspect that has led to these sorts of languages being extensively used for Artificial Intelligence software systems. In addition, they are also often used for rapid prototyping of novel software systems, and many of the ideas and techniques employed in declarative programming language systems have found broader application.

The unit of study focuses on two languages: Prolog and Lisp. Through a combination of workshops, lectures and assignment students will gain practical skills and come away with significant new tools with which to tackle future software development projects.
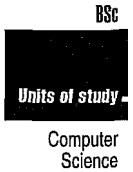
COMP 3906 Declarative Programming Languages (Advanced)

4 credit points

Qualifying: COMP 2004 or 2904. **Prerequisite:** 16 credit points of Intermediate or Senior Computer Science with Distinction average and 8 credit points of Intermediate Mathematics and/or Statistics and/or Econometrics. **Prohibition:** May not be counted with COMP 3006. **Offered:** February. **Classes:** 2 lect & 1 tut/wk. **Assessment:** Written and programming assignments; written exam.

An advanced alternative to COMP 3006; covers material at an advanced and challenging level.

COMP 3007 Networked Systems

4 credit points

Qualifying: COMP 2004 or 2904. **Prerequisite:** COMP 2001 or 2901 or ELEC 2601. **Prohibition:** May not be counted with COMP 3907. **Offered:** February. **Classes:** 2 lec & 2 prac/wk. **Assessment:** Assessment assignments, written exam.

This unit of study deals with various aspects of communications and distribution systems. It introduces the concepts of computer communications, it exposes limitations of communications channels, and it identifies network components and the way they fit together to provide communications functions. The unit of study is also a study of network organisations, and of protocols required at different levels for efficient, reliable, secure, and meaningful communications (International Standard Organisation's OSI reference model and protocols). Emphasis, however, is placed on the Internet and TCP/IP protocol suite. Students are expected to be able to write distributed applications based on the client/server model using Remote Procedure Call (RPC).

Practical: The practical aspects of the unit of study are centred around a specially designed network laboratory. Experiments aim to provide hands-on experiences on many essential, but difficult aspects of networking. The unit of study offers a wide range of experiments, from the network physical layer (RS-232), managing Microsoft Windows Networks, basic Unix administration to programming with sockets, remote procedure calls, to writing client/server application, Simple Mail Transfer Protocol (SMTP) application.

COMP 3907 Networked Systems (Advanced)

4 credit points

Qualifying: COMP 2004 or 2904. **Prerequisite:** 16 credit points of Intermediate or Senior Computer Science with Distinction average and COMP 2001 or 2901 or ELEC 2601. **Prohibition:** May not be counted with COMP 3007. **Offered:** February. **Classes:** 2 lec & 2 prao/wk. **Assessment:** Written and programming assignments; written exam.

An advanced alternative to COMP 3007; covers material at an advanced and challenging level.

COMP 3008 Object-Oriented Systems

4 credit points

Qualifying: COMP 2004 or 2904. **Prohibition:** May not be counted with COMP 3908. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assessment assignments, written exam.

Provides further study of the object-oriented paradigm in all stages of the software lifecycle.

COMP 3908 Object-Oriented Systems (Advanced)

4 credit points

Qualifying: COMP 2004 or 2904. **Prerequisite:** 16 points of Intermediate or Senior Computer Science with Distinction average. **Prohibition:** May not be counted with COMP 3008. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Written and programming assignments; written exam.

An advanced alternative to COMP 3008; covers material at an advanced and challenging level.

COMP 3009 Operating Systems

4 credit points

Qualifying: COMP 2004 or 2904. **Prerequisite:** COMP 2001 or 2901 or ELEC 2601. **Prohibition:** May not be counted with COMP 3909. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assessment assignments, written exam.

This unit of study provides an introduction to the design and construction of modern operating systems. The emphasis of the unit of study is design and the identification of high-level abstractions. However, the unit of study also has a strong practical component and includes practical exercises which involve the students in implementing components of an operating system. Topics covered include an introduction to concurrency and synchronisation, processes and process scheduling, memory management, virtual memory, file systems and security. The unit of study is not based on a particular operating system, but frequent reference is made to a number of contemporary systems including Unix, Windows NT and MacOS.

COMP 3909 Operating Systems (Advanced)

4 credit points

Qualifying: COMP 2004 or 2904. **Prerequisite:** 16 points of Intermediate or Senior Computer Science with Distinction average and COMP 2001 or 2901 or ELEC 2601. **Prohibition:** May not be counted with COMP 3009. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Written and programming assignments; written exam.

An advanced alternative to COMP 3009; covers material at an advanced and challenging level.

COMP 3100 Software Engineering

4 credit points

Prerequisite: COMP 2004 or 2904. **Prohibition:** May not be counted with COMP 3800. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assessment assignments, written exam.

NB: Change to semester availability subject to Faculty approval.
Software Engineering is designed to equip students with the knowledge necessary to undertake large software design and implementation tasks in a team environment. Emphasis will be on specification, design, implementation and validation tuned to large applications. Students will learn about current software engineering tools and environments to prepare them for real projects. The contents of this unit of study will include the software life cycle, human factors in software engineering, requirements analysis and specification techniques, design methodologies, implementation issues, software tools, validation, verification, quality assurance and software project management issues.

COMP 3800 Software Engineering (Advanced)

4 credit points

Qualifying: COMP 2004 or 2904. **Prerequisite:** 16 points of Intermediate or Senior Computer Science with Distinction average. **Prohibition:** May not be counted with COMP 3100. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Written and programming assignments; written exam.

NB: Change to semester availability subject to Faculty approval.
An advanced alternative to COMP 3100; covers material at an advanced and challenging level.

COMP 3102 User Interfaces Design and Programming

4 credit points

Qualifying: COMP 2004 or 2904. **Prohibition:** May not be counted with COMP 3802. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Assessment assignments, written exam.

This unit of study introduces several of the critical elements programmers need to create effective user interfaces. These include the essentially 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 skills 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 the Python scripting language and TK toolkit for building graphical interfaces.

COMP 3802 User Interfaces (Advanced)

4 credit points

Qualifying: COMP 2004 or 2904. **Prerequisite:** 16 points of Intermediate or Senior Computer Science with Distinction average. **Prohibition:** May not be counted with COMP 3102. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Written and programming assignments; written exam.

An advanced alternative to COMP 3102; covers material at an advanced and challenging level.

COMP 3201 Algorithmic Systems Project
4 credit points
Corequisite: COMP 3001 or 3901. Offered: July. Classes: supervised project. Assessment: Assessment quality of software product, written report, product presentation.
NB: Changes to semester availability, prerequisites and corequisites subject to Faculty approval.
Some of the most exciting work being done in the Algorithms and Complexity area today is concerned with the development of software which applies the algorithms and techniques to practical problems. Much progress has been made recently in graph drawing, computational geometry, timetable construction, etc. Real-life instances of these kinds of problems are typically too large to be solved without using efficient algorithms that have been developed for them. In this unit of study you will work in a group to develop a software product of this kind. Past projects have included graph editors for X-windows, various computational geometry projects, and timetable construction.

COMP 3202 Computer Systems Project
4 credit points
Prerequisite: COMP 3009 or 3909. **Corequisite:** Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204 or 3205, 3206 or 3809. **Offered:** February, July. **Classes:** supervised project. **Assessment:** Assessment quality of software product, written report, product presentation.

Students work in groups on a software project. The aim of the project is to provide substantial practical experience in designing and modifying an operating system. The task will involve extension and modification of an operating system, which itself runs on simulated hardware above Unix. The simulation is very realistic and all of the usual operating system implementation problems, including synchronisation, memory management, I/O, etc, will be encountered.

COMP 3203 Artificial Intelligence Project
4 credit points
Corequisite: COMP 3002 or 3902. Offered: February. Classes: supervised project. Assessment: Assessment quality of software product, written report, product presentation.
NB: Changes to unit name, semester availability, prerequisites and corequisites subject to Faculty approval.
As with any other applied science, theories and techniques in Artificial Intelligence, regardless of how fancy they appear to be, are of little use by themselves unless they can be used to solve real world problems. Furthermore, they can best be understood and mastered by applying them to non-trivial practical problems. In this project, students will have a chance to write computer programs to solve practical problems in a way "similar" to what intelligent beings do. Specifically, students will be asked to apply learned AI techniques to solve small but realistic and knowledge intensive tasks (e.g., advice-giving, troubleshooting), in a carefully selected domain; and to evaluate the utility and performance of the techniques used. Students will work in groups.

COMP 3204 Software Engineering Project
4 credit points
Corequisite: COMP 3100 or 3800. Offered: July. Classes: supervised project. Assessment: Assessment quality of software product, written report, product presentation.
NB: Changes to unit of study title, description, semester availability, prerequisites and corequisites subject to Faculty approval.
The primary objectives of this module are that students:
- have the opportunity to complete a large and realistic software development task
- develop skills in defining software requirements in response to an authentic user's needs
- put into practice state-of-the-art techniques for developing quality software and record these processes in reports
- develop skills in working in software teams

- evaluate the quality of the software developed
  Students will produce several products:
- a requirements document
- evaluation of a product in terms of user needs and the report of testing the software
- produce a report to the client on what has been achieved
- a software product with supporting documentation, in a form suitable to hand over to the client
- a poster outlining the project and highlighting its achievements

COMP 3205 Product Development Project
4 credit points
Prerequisite: COMP 3008. Corequisite: Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204 or 3205, 3206 or 3809. Offered: February, July. Classes: supervised project. Assessment: Assessment quality of software product, written report, product presentation.
The Product Development Project consists of working, as a member of a group of four students, in the specification, design, implementation and testing of a substantial software product, using sophisticated techniques including object-oriented programming. The product is often intended for users elsewhere in the University or in the Department, and an important aspect is discussion with eventual users to determine their needs. The unit of study has three aims. Firstly, students learn to use previously gained implementation, testing, and debugging skills in the realisation of a complete, practical product. Secondly, the importance of careful specification, design and project management to successful completion of a product by a co-operating team is made manifest. Thirdly, students learn to take responsibility for a project and work independently of detailed supervision under the demanding 'sink or swim' conditions of real software development.

COMP 3206 Bioinformatics Project
4 credit points
Qualifying: COMP 2004 or 2904. **Prerequisite:** 8 credit points of Senior Computer Science (including COMP 3008/3100/3908/3800) and 16 credit points of Intermediate Biology, Biochemistry and/or Pharmacology. **Offered:** July. **Classes:** weekly meeting with supervisor plus project work; 3-4 introductory lectures. **Assessment:** Quality of software and documentation produced; quality of process; student's written evaluation of outcome.
Students work in groups to design and develop software that will be useful to practitioners in biosciences.

COMP 3809 Software Project (Advanced)
4 credit points
Prerequisite: 16 credit points of Intermediate or Senior Computer Science, with Distinction average. **Corequisite:** 8 credit points of Senior Computer Science. **Offered:** February, July. **Classes:** 30 mins/week meeting with project supervisor; 3-4 introductory talks; private work on the project. **Assessment:** Based on quality of the software and documentation produced, and the process by which it is produced, and the student's written reflections on the outcome.
This unit of study involves students in producing innovative software to support activity in a research or advanced development project, either within the university or **in** industry.

INFO 3005 Organisational Database Systems
8 credit points
Qualifying: INFO 2005 or COMP 2005. **Prohibition:** May not be counted with INFO 3905 or COMP 3005 or COMP 3905. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **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.

BSc

Units of study

Computer Science

INFO 3905 Organisational Database Systems (Adv)
4 credit points
Qualifying: INFO 2005 or COMP 2005. **Prerequisite:** 16 credit points of Intermediate or Senior Computer Science units of study with Distinction average. **Prohibition:** May not be counted with COMP 3005 or COMP 3905 or INFO 3005. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **Assessment:** Written and programming assignments; written exam.

An advanced alternative to INFO 3005; covers material at an advanced and challenging level.

ISYS 3000 Management of Information Systems
4 credit points
Qualifying: INFO 2000 or COMP 2000. **Offered:** July. **Classes:** 2 lec, 1 tut/wk; 1 unscheduled lab work. **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 3011 Information Systems Methodologies
4 credit points
Qualifying: INFO 2000 and INFO 2005. **Offered:** February. **Classes:** 2hr lec & 1 prac/wk. **Assessment:** One 3hr examination (70%), written assignments (30%).
NB: Not offered in 2000.
The syllabus includes investigation of a variety of different methodologies including variations of Object Oriented methodologies.

ISYS 3012 Project Management and Practice
4 credit points
Qualifying: INFO 2000. **Offered:** February. **Classes:** 2hr lec, 1 prac & 1hr independent study/wk. **Assessment:** One 3hr examination (70%), written assignments (30%).

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 Information Systems Research Methods
4 credit points
Qualifying: ENGL 1050 or equivalent or ARIN 1000 and 24 credit points of Intermediate units of study including 8 credit points from INFO or ISYS units of study. **Offered:** February. **Classes:** 2hr lec & 1 prac/wk. **Assessment:** One 3hr examination (70%), written assignments (30%).

To understand the nature of Systems Thinking, and the methods and factors necessary for the successful collection of opinions and judgements. To understand how to analyze opinions and judgements in both scientifically sound statistical methods and empirically reliable qualitative methods. 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 3207 Information Systems Project
8 credit points
Qualifying: ISYS 3015. **Prerequisite:** INFO 3005 or ISYS 3000 or ISYS 3012. **Offered:** July. **Classes:** 2hr lec & 1 prac/wk. **Assessment:** One 3hr examination (70%), written assignments (30%).

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.

Computer Science Honours

Prerequisite: Permission by the Faculty is required. Assessment: Assessment exam, class, prac, project thesis.

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 Department and the Faculty, as follows: 8 credit points of research preparation, covering a literature review and research plan, 16 credit points of research project, and 24 credit points of coursework units of study, which, except with permission of the Department 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 or INFO).

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; individual results for separate units of study will not appear on the transcript, instead 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.

COMP 4301 Algorithms (AdvancedTopic)
4 credit points
Prerequisite: Credit in COMP 3001. **Offered:** February, July. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination.
NB: This unit may be available in February or July semester; it may not always be offered.
To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Algorithms. This would build on the broad survey provided by COMP 3001. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: parallel algorithms, randomised algorithms, approximation algorithms for intractable problems.

COMP 4302 Artificial Intelligence (AdvancedTopic)
4 credit points
Prerequisite: Credit in COMP 3002. **Offered:** February, July. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination.
NB: This unit may be available in February or July semester; it may not always be offered.
To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Artificial Intelligence. This would build on the broad survey provided by COMP 3002. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: Machine Learning, Natural Language Processing, Non-monotonic reasoning.

COMP 4304 Graphics (AdvancedTopic)
4 credit points
Prerequisite: Credit in COMP 3004. **Offered:** February, July. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination.
NB: This unit may be available in February or July semester; it may not always be offered.
To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Graphics. This

would build on the broad survey provided by COMP 3004. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: three-dimensional rendering, constraint-maintainance image systems.

COMP 4305 Networked Systems (AdvancedTopic)
4 credit points
Prerequisite: Credit in COMP 3007. **Offered:** February, July.
Classes: 2hrs lec & 1 hr tutorial or lab/wk. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Networked Systems. This would build on the broad survey provided by COMP 3007. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: network management and performance tuning, internetworking, implementation of network protocols.

COMP 4307 Distributed Systems (AdvancedTopic)
4 credit points
Prerequisite: Credit in COMP 3007 or Credit in COMP 3009.
Offered: February, July. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk.
Assessment: Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Distributed Systems. This would build on ideas of networks or operating systems provided in the prerequisites. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from" one offering to another, depending on staff interest and expertise. Example topics include: electronic commerce, distributed operating systems, security in distributed systems.

COMP 4309 Object-Oriented Systems (Advanced Topic)
4 credit points
Prerequisite: Credit in COMP 3008. **Offered:** February, July.
Classes: 2hrs lec & 1 hr tutorial or lab/wk. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Object-Oriented Systems. This would build on the broad survey provided by COMP 3008. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: distributed object systems, implementation of object-oriented languages, type theory for object langauges.

COMP 4400 Operating Systems (AdvancedTopic)
4 credit points
Prerequisite: Credit in COMP 3009. **Offered:** February, July.
Classes: 2hrs lec & 1 hr tutorial or lab/wk. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Operating Systems. This would build on the broad survey provided by COMP 3009. The coverage would be at the level of a professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depend-

ing on staff interest and expertise. Example topics include: system administration, process group infrastructure, modern kernal internals.

COMP 4401 Software Engineering (Advanced Topic)
4 credit points
Prerequisite: Credit in COMP 3100. **Offered:** February, July.
Classes: 2hrs lec & 1 hr tutorial or lab/wk. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Software Engineering. This would build on the broad survey provided by COMP 3100. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: software metrics, tools for CASE, software architecture description.

COMP 4402 User Interfaces (AdvancedTopic)
4 credit points
Prerequisite: Credit in COMP 3102. **Offered:** February, July.
Classes: 2hrs lec & 1 hr tutorial or lab/wk. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in Februaiy or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of User Interfaces. This would build on the broad survey provided by COMP 3102. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: user-adaptive systems, information filtering, usability testing.

COMP 4403 Computation Theory (Advanced Topic)
4 credit points
Prerequisite: Credit in COMP 2003 and 8 credit points of Intermediate Mathematics. **Offered:** February, July. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in February or July semester; it may not always be offered.

To develop understanding of the theoretical limits of computation, and the proof techniques used to show these limits in specific problems. Syllabus Summary: Computability; models of computation and their relationships; recursive sets and recursively enumerable sets; Godel incompleteness theorem; halting problem; complexity theory; speed-up theorems; reductions; NP-completeness.

COMP 4404 Scientific Visualisation (Advanced Topic)
4 credit points
Prerequisite: Credit in one of: COMP 3001 or COMP 3304 or PHYS 3303. **Offered:** February, July. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination.
NB: This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Scientific Visualisation. The coverage would be at the level of a professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: medical imaging and simulation.

BSc

Units of study

Computer Science

COMP 4601 Advances in Computer Science 1
4 credit points
Prerequisite: Permission of Head of Department. **Offered:**
February, July. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk.
Assessment: Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Computing. This unit is used when a student wants to take a further topic within a field which has already been studied at 4000-level. Head will not grant permission unless the topic being taught is substantially different from those studied previously.

COMP 4602 Advances in Computer Science 2
4 credit points
Prerequisite: Permission of Head of Department. **Offered:**
February, July. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk.
Assessment: Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Computing. This unit is used when a student wants to take a further topic within a field which has already been studied at 4000-level. Head will not grant permission unless the topic being taught is substantially different from those studied previously.

COMP 4603 Advances in Computer Science 3
4 credit points
Prerequisite: Permission of Head of Department. **Offered:**
February, July. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk.
Assessment: Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Computing. This unit is used when a student wants to take a further topic within a field which has already been studied at 4000-level. Head will not grant permission unless the topic being taught is substantially different from those studied previously.

COMP 4604 Advances in Computer Science 4
4 credit points
Prerequisite: Permission of Head of Department. **Offered:**
February, July. **Classes:** 2hrs lec & 1 hr tutorial or lab/wk.
Assessment: Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Computing. This unit is used when a student wants to take a further topic within a field which has already been studied at 4000-level. Head will not grant permission unless the topic being taught is substantially different from those studied previously.

INFO 4300 Information Systems (AdvancedTopic)
4 credit points
Prerequisite: Credit in COMP 3000. **Offered:** February, July.
Classes: 2hrs lec & 1 hr tutorial or lab/wk. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Information Systems. This would build on the broad survey provided by COMP 3000. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: management of change in organisations, soft systems analysis, workflow management.

IN FO 4306 Database Systems (Advanced Topic)
4 credit points
Prerequisite: Credit in COMP 3005. **Offered:** February, July.
Classes: 2hrs lec & 1 hr tutorial or lab/wk. **Assessment:** Written and practical assignments (individually and/or in small groups) and a final examination.

NB: This unit may be available in February or July semester; it may not always be offered.

To develop knowledge of the concepts, and mastery of the techniques, in one specialist topic within the field of Database Systems. This would build on the broad survey provided by COMP 3005. The coverage would be at the level of an professional monograph, or papers from the research literature. The specific topic covered would vary from one offering to another, depending on staff interest and expertise. Example topics include: transaction processing monitors, advanced conceptual modelling, object-oriented databases.

INFO 4901 Research Preparation
8 credit points
Prerequisite: Permission of Head of Department. **Offered:**
February, July.

*NB: * Unit of study subject to Faculty approval.*

This unit involves the preparation needed for a significant project of research. A weekly lecture covers topics such as use of literature, structure of a thesis, evaluation of research claims. Students are required to produce three main contributions.

- A literature review:

    This must give a thoughtful and integrated account of the relevant prior work, as normally found in a thesis chapter. Assessment will be based on both the thoroughness of tie coverage and on the understanding of the purpose and prior work.

- Research Plan and Project requirements:

    For a system or product type project, the specifications are similar to those defined in software engineering. For a meoretical type of project, this realy means a "critical analysis of the problem, identification of the problem and definition of the problem". Assessment is based on the appropriateness of the work as a basis for a successful honours project

- Initial progress:

    The nature of ths progress should be negotiated with the project supervisor, but it could be, for example, a prototype implementation, derivation of existing results, or an experimental setup (eg. a simulation environment).

IN FO 4902 Research Project
16 credit points
Prerequisite: Permission of Head of Department. **Offered:**
February, July.

*NB: * Unit of study subject to Faculty approval.*

This unit represents the completion of the project of supervised research, whose inital planning was done in INFO 4901. The main outcome is a thesis (usually about 50 pages long), which describes the purpose of the work, the background and prior results, what was accomplished, the evidence you have collected for the success of the project, and what furmer work might be worthwhile. For the most successful projects, it is reasonable that the thesis will form the basis of publications in the research literature.

Information Systems Honours

Prerequisite: Permission by the Faculty is required.
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 men 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 Department include natural language processing, data mining, systems methodologies and Workflow methods. Students are required to participate in Departmental seminars as part of their coursework and in all other activities of the Department. 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 Departmental Handbook and the Honours Guide Book.

Engineering Science
Chemical Engineering

The Department of Chemical Engineering is part of the Faculty of Engineering. In addition to providing professional training of this branch of engineering, it provides two units of study in the Faculty of Science, namely Chemical Engineering 2A and Chemical Engineering 2B, both 8 credit points.

These units of study are available as Intermediate units of study in a science degree for students majoring particularly in chemistry, but also in biochemistry, physics or mathematics, and who are thinking of a career in the chemical and process industries, or in applied industrial research.

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.

Conversion course

The Department of Chemical Engineering also offers a two year award course by which the holder of a Bachelor of Science degree may obtain a degree in Chemical Engineering provided they have satisfied certain requirements. 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 degree course may be obtained from the Engineering Faculty Office in the Engineering Faculty Building.

Structure of unit of study

Chemical Engineering 2A and 2B provide an introduction to the nature and analysis of large-scale chemical operations.

Tutorials and laboratories

All students are required to undertake the tutorial and laboratory work associated with these units of study, details of which are set out in the timetables. The experimental and tutorial work is designed as an integral part of the unit of study to complement the lecture material.

CHNG 2101 Chemical Engineering 2A
4 credit points
Offered: February.
See Faculty of Engineering handbook for details.

CHNG 2102 Chemical Engineering 2B
4 credit points
Offered: July.
See Faculty of Engineering handbook for details.

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 provides a 16 credit point unit of study, Civil Engineering Science 2, in the Faculty of Science.

The unit of study is available as an Intermediate unit of study in a science degree for students majoring in Mathematics, Physics, Chemistry, Geology, Computer Science or Soil Science, and who are thinking of an applied science career in building or civil engineering or in related fields.

The unit of study is 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.

Double degree

Some BSc graduates, who have passed the unit of study Civil Engineering Science 2, may obtain a Bachelor of Engineering degree in Civil Engineering after an additional two years' study, following 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 Civil Engineering may be obtained from the Engineering Faculty Office in the Engineering Faculty Building.

Tutorials and laboratories

All students are required to undertake the tutorial and laboratory work associated with these units of study, details of which are set out in the timetables. The experimental and tutorial work is designed as an integral part of the unit of study to complement the lecture material. It should be noted that the difficulties of timetabling are such that the majority of classes are in the February semester.

ENG8 2201 Civil Engineering Science 2A
12 credit points
Prerequisite: CHEM 1102 or 1902 or 1904 or 12 credit points of Junior Physics or 12 credit points of Junior Mathematics. **Offered:** February.

Properties of Materials

Classes: February Semester, 3 lec/wk & four 3hr prac/sem. Assessment: one 3hr exam, coursework.

Production, solidification and bonding in metals. Elastic-plastic deformation of metals. Microstructural effects relating to mechanical properties of metals. Welding. Hydrogen embrittlement, lamellar tearing. Fatigue and brittle fracture. Hardened cement paste, mortar, concrete, timber, masonary. Cements and their hydration, minerals and other admixtures in concrete, mix design.

Textbook

Callister (Jr) WD. Materials Science and Engineering - An Introduction. 4th edn, John Wiley & Sons 1997.

Statics

Classes: February Semester, 2 lec & 2hr tut/wk. Assessment: one 2hr exam, class.

Basic concepts; scalars and vectors; units; the SI system; forces and moments in 2D and 3D. Statics of the rigid body: systems isolation; free body diagrams, and equilibrium criteria. Distributed force systems: cables and hydrostatics; statically determinate, pinjointed structures and machines.

Textbook

Meriam. Engineering Mechanics. 4th edn, Vol. 1, Statics, Wiley, 1997 (SI version)

Structural Mechanics

Classes: February Semester, 3 lec & one 2hr tut/wk. Assessment: one 3hr exam, class.

Statics, shear, moment and axial force diagrams. Elementary elasticity, stresses, strains, deformations, compatibility. Bending and shear stresses in beams. Deflection of beams. Analysis of triangulated frames. Torsion. Elementary instability. Combined stresses, failure theories. Influence lines.

Textbook

Megson Structural and Stress Analysis, Arnold, 1996.

ENGS2202 Civil Engineering Science 2B
4 credit points
Offered: July. **Classes:** two **1** hr lec & one 2hr prac/wk.
Assessment: One 3hr exam, class.

Structural Design

Philosophy of design. Loads. Design of simple elements of steel and concrete structures. Design project.

Textbooks

Buckle. Elements of Structure. 2nd edn, Pitman
SAA HB22. - 1995 Australian Standards for Civil Engineering Students Part 2: Structural Engineering.
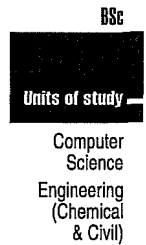
School of Geosciences

The School of Geosciences includes three discipline areas with separate unit of study codes: Geography (GEOG), Geology (GEOL) and Geophysics (GEOP). Students may major in any one of the three areas. The School is located in the Edgeworth David Building (Geology and Geophysics) and in the Madsen Building (Geography).

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

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

Tutorials and practical work

First year students must attend one three-hour practical session each week (see timetable). All students in second and third years are required to attend tutorials and/or designated practical sessions each week.

Assigned work and examinations

In Junior, Intermediate and Senior units of study, assignments contribute significantly to final marks.

Conducted field excursions

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

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

Geography handbook

Further details of activities, units of study, excursions, and other relevant material are contained in the Geography Handbook available from the Enquiry Office in the Madsen Building.

Note: Some units of study may be rescheduled to allow for expected staff changes.

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. Both units of study consist of three lectures and three hours of laboratory work a week. Morning lectures are repeated in the afternoon. All students do the same unit of study.

GEOG 1001 Biophysical Environments
6 credit points
Assoc. Prof. Short, Dr Gale
Offered: February. **Classes:** 3 lec & 3hr prac/wk. **Assessment:** One 3hr exam, 1500w report, prac assignments.

This unit of study is an introduction to the earth's physical environment. The unit of study begins by considering the earth's place in the universe, its origin and development, and the nature and evolution of the earth's structure. This is followed by the evolution of the earth's physical environment and environmental change 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 the atmospheric and ocean processes with the earth's surface, including fluvial, arid, coastal and glacial systems.

Practical: Field excursion one half day/sem.

GEOG 1002 Human Environments
6 credit points
Assoc. Prof. Connell & Dr W Pritchard
Offered: July. **Classes:** 3 lec & 3hr prac/wk. **Assessment:** One 3hr exam, 2000w essay, prac exercises.

Environmental and Human Geography 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 economic activities with special reference to Australia and the Asia-Pacific region.

Geography Intermediate units of study

The Department offers six Intermediate units of study in 3 streams - namely geomorphology, environmental geography and human geography. The streams and their units of study are:

Geomorphology - Geography 2001 and 2002
Environmental - Geography 2101 and 2102
Human - Geography 2201 and 2202

Each unit of study consists of three lectures and the equivalent of five hours assigned work (which may comprise 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 which 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 must select two Intermediate Geography units of study. Each unit of study is 8 credit points. A student would normally select two sequential units of study from one of the three streams (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.

Special Geography Sequence (Science students)

A candidate who has completed 12 Junior credit points of Mathematics and 12 Junior credit points of Physics or Chemistry and who has not taken Geography 1001 or 1002 may apply under Section 1(4) for permission to enrol in any Intermediate Geography unit of study.

The Department of Geography is not normally prepared to support applications under Section 1(4) to enrol in Intermediate Geography units of study from persons other than those who, in their first year of studies, have completed four Junior units of study above the concessional pass grade

and have not subsequently failed in any Intermediate unit of study. Students are permitted to count only 16 credit points of Intermediate Geography units of study towards the BSc degree.

GEOG 2001   Processes in Geomorphology
8 credit points
Associate Professor D Dragovich
Prerequisite: GEOG 1001 or ENV11002. **Prohibition:** Other Information: A candidate who has completed 12 Junior credit points of Mathematics and 12 Junior credit points of Physics or Chemistry and who has not taken GEOG 1001 or 1002 may apply under Section 1 (4) for permission to enrol in any Intermediate Geography unit of study. The School of Geosciences is not normally prepared to support applications under Section 1 (4) to enrol in Intermediate Geography units of study from persons other than those who, in their first year of studies, have completed four Junior units of study above the concessional pass grade and have not subsequently failed in any Intermediate unit of study. **Offered:** February. **Classes:** 3 lec & 5 prac or field/wk. **Assessment:** One 3hr exam or 1500w essay or prac papers.

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

GEOG 2002   Fluvial and Coastal Geography
8 credit points
Dr P Cowell & Mr G Doyle
Prerequisite: GEOG 1001 or ENV11002. **Prohibition:** Other Information: As for GEOG 2001. **Offered:** July. **Classes:** 3 lec & 5 prac or field/wk. **Assessment:** One 3hr exam, 1500w essay or prac reports.

Physical Geography stream: This unit of study focuses not on global, but meso- and micro-scales on two of the major morpho-stratigraphic systems, namely fluvial and coastal geomorphology. Both provide introductory analyses of rivers and coasts, so fundamental to understanding the physical environments which affect the sustainability of these regions.

GEOG 2101   Environmental Change and Human Response
8 credit points
Associate Professor D Dragovich & Dr Chapman
Prerequisite: GEOG 1001 or 1002 or ENV11002. **Prohibition:** Other Information: As for GEOG 2001. **Offered:** February. **Classes:** 3 lec & 2 prac & field/wk. **Assessment:** One 3hr exam, 1500w essay or prac reports.

Environmental Geography stream: 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 largely caused by humans, but in other cases humans are helpless before the uncontrollable forces of nature. Environmental change is explored in all of these categories. Consideration is given to land degradation problems such as soil erosion and desertification, and how humans are both implicated in these problems and respond to them. We also study environmental hazards like floods, earthquakes and bushfires, and how we may (or in some cases may not) effectively manage them. Included in the unit of study will be a variety of techniques for the analysis of environmental problems.

GEOG 2102   Resource and Environmental Management
8 credit points
Dr Hirsch and Dr McManus
Prerequisite: GEOG 1001 or 1002 or ENV11002. **Prohibition:** Other Information: As for GEOG 2001. **Offered:** July. **Classes:** 3 lec & 5hr tut or prac or fieldwork/wk. **Assessment:** One 3hr exam, 2000w essay, tut papers, prac and fieldwork report/s.
Environmental Geography stream: This unit of study forms part of the Environmental Geography and Resource Management stream which 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, as appropriate, 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.

GEOG 2201   Social and Urban Geography
8 credit points
Assoc Prof Connell
Prerequisite: GEOG 1002 or ENV11002. Prohibition: Other Information: As for GEOG 2001. Offered: February. Classes: 3 lec & 5hr tut or prac or fieldwork/wk. Assessment: One 3hr exam, 2000w essay, tut papers, prac and fieldwork reports.
Human Geography stream: This unit of study examines how people conceive and construct space in various contexts, with an emphasis on urban spaces. Topics examined include the subjectivity of geography, mental maps, language, religion and music. Two themes dominate: firstly, the manner in which social values and ideologies shape rural and urban space in different cultural contexts; and secondly, the manner in which landscapes are perceived and used in very different ways, according to social variables including gender and cultural location. A section on urban social geography focuses on consumer culture and shopping malls, suburban images, sport, sexual spaces, ethnicity and the contrast between gentrification and suburban Utopias. This is then broadened to an analysis of spatial processes and patterns of cities in both the western and post-colonial worlds.

GEOG 2202   Economic and Political Geography
8 credit points
DrW Pritchard, Prof E Waddell
Prerequisite: GEOG 1002 or ENV11002. Prohibition: Other Information: As for GEOG 2001. Offered: July. Classes: 3 lec & 5hr tut or prac or fieldwork/wk. Assessment: One 3hr exam, 2000w essay, tut papers, prac and fieldwork reports.
Human Geography stream: This unit of study starts by examining urban processes and problems in developed and developing countries. For developed countries, the focus is on urban economies, suburbs, urban politics and the nature of the built environment. For developing countries, urbanisation trends and ideology of planning policies are considered, including governments' perception of and response to the informal sector, slums and rural-urban migration. The unit of study then presents the main principles of economic geography, examining the processes which distribute and redistribute economic activities around the world, within nations and within regions. It examines the impact of geography from the global to the local level on economic dynamics. The unit of study discusses the major alternative theories in economic geography and their implications for policy and politics.

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 - Geography 3001 and 3002
Environmental - Geography 3101 and 3102
Human - Geography 3201 and 3202
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 topics must have majored in the Geomorphology stream units of study; they may elect to do either Geography or Geomorphology Honours.

GEOG 3001   Coastal Environments and Dynamics
12 credit points
Assoc. Prof. Short, Dr Cowell
Prerequisite: GEOG 2001 or 2002 or 2101 or MARS 2002.
Offered: February. **Classes:** 3 lec & 6hr prac orfield/wk.
Assessment: One 3hr exam, two 1500w essays, prac reports.
Senior Geomorphology stream

This unit of study examines the marine, terrestrial and atmospheric components that contribute to the formation and the nature of coastal environments, with particular emphasis on Australian coastal systems. It goes on to focus on the general principles of morphodynamic adjustment to changes in coastal boundary components and their impact on the inner shelf, shoreface and estuaries. The field excursions are closely linked to the unit of study and practical work.
Practical: Field excursion one 1-day, two 3-day.

GEOG 3002   Environmental Geomorphology
12 credit points
Associate Professor D Dragovich
Prerequisite: GEOG 2001 or 2002 or 2101. **Offered:** July. **Classes:** 3 lec & 6 prac orfield/wk. **Assessment:** One 3hr exam, two 1500w essays, prac and field reports.
Senior Geomorphology stream

This unit of study considers in even greater detail geomorphological, biophysical and related environmental problems. Part of the unit of study may be taken with Soil Science. This part deals with soils and landforms and is useful to pedologists and geomorphologists. The other two components are concerned with the weathering of rocks, whether in landscapes or building materials; and a specialised topic in the fluvial area.

GEOG 3101   Catchment Management
12 credit points
Lecturers to be determined
Prerequisite: GEOG 2001 or 2002 or 2101 and GEOG 2102 or 2201 or 2202. **Offered:** February. Classes: 3 lec & 1 tut & 8 prac or field/wk. **Assessment:** One 3hr exam, two 1500w essays.
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 form the Murray-Darling, Mekong, and Hawkesbury-Nepean catchments. Fieldwork in the latter is integral to the unit of study.

GEOG 3102   Coastal Management and GIS
12 credit points
Dr Chapman, Dr Cowell
Prerequisite: GEOG 2001 or 2002 or 2101 or MARS 2002.
Offered: July. **Classes:** 3 lec & 6 prac or field/wk. **Assessment:** One 3hr exam, two 1500w essay, prac or reports.
Senior Environmental Geomorphology stream

The coastal zone provides an ideal area for the study of resources management, since virtually all the central concerns of resources management are exemplified in that zone. Hence, the structure of this unit of study will be determined by these concerns, with the application to the coastal zone providing the central unifying theme. The unit of study first addresses critical physical systems and natural hazards in the coastal zone, and the ways in which decisions are made about resources management. The unit of study then applies geographical information systems in environmental assessment and management of coastal drainage catchments. It focuses on the development and application of GIS models for strategic planning and is structured around a field exercise in location-analysis within a coastal catchment. Practical work involves extensive use of computers.
Practical: Field excursion one 2-day.

GEOG 3201   Asia-Pacific Development
12 credit points
Assoc. Prof. Conneii, Dr Hirsch, Prof E Waddell
Prerequisite: GEOG 2101 or 2102 or 2201 or 2202. **Offered:** February. **Classes:** 3 lec & 9hr tut or prac or fieldwork/wk.
Assessment: One 3hr exam, two 2000w essays, tut papers, prac and fieldwork reports.
Senior Social and Economic Geography stream

The unit of study builds on key human geographic principles from the sub-disciplines of environmental, economic, development, social, cultural and urban geography.

The unit of study contains three options. Two are taught sequentially within the semester. The third is a field school that is run over a five week period in January-February, that is prior to the commencement of the semester. The Field School is held alternately in Southeast Asia (typically Vietnam, Laos and Thailand) and in the Island Pacific (typically Fiji, Vanuatu and New Caledonia). It is run in close association with university staff and students in the host countries and it focusses on environmental and developmental issues in the context of rapid rural and urban change.

GEOG 3202   Australia in its Global Context
12 credit points
ProDrW Pritchard, lecturer to be determined
Prerequisite: GEOG 2102 or 2201 or 2202. **Offered:** July. **Classes:** 3 lec & 9 hrs tut or prac or fieldwork or indiv. research/wk.
Assessment: One 3hr exam, two 2000w essays, tut papers, prac and fieldwork report/s.
Senior Social and Economic Geography stream

This unit of study develops and extends an understanding of the varied human geographies of urban and regional Australia with an emphasis upon geographic change in response to local, national and international influences. The intention is that students completing this unit of study will have a sound knowledge of the range of issues relevant for further study or policy applications to urban, rural and remote regions of Australia. Topics covered include: the interaction of economic, social and political processes, the geography of economic restructuring, the relationships among structures and processes, metropolitan and large city spatial management, policies and processes pertaining to smaller settlements and regional development issues.

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.

Geomorphology Honours

Students who enter fourth year through the Senior Geography Geomorphology stream, and who choose to work on landform studies, may elect to proceed to an Honours degree in Geomorphology in lieu of Geography. General unit of study requirements are identical with those listed for Geography Honours.

Geology and Geophysics

Location
Geology and Geophysics are housed in the Edgeworth David Building, immediately south of Fisher Library on Eastern Avenue. First year lectures and laboratories are held in the Carslaw Building.

Noticeboard
Information for Junior Geology students is posted on the noticeboard inside Carslaw Laboratory 1. Noticeboards for students in Intermediate and later years are in the foyer and corridors of the Edgeworth David Building. Students should consult the noticeboard regularly.

Registration
All Junior Geology students are required to register with the Department in the first laboratory session of each semester. Students in Intermediate and Senior years are required to register in the Enquiry Office, Room 312 Edgeworth David Building, before each unit of study commences.

Structure of Units of Study
Entry into Junior units of study in Geology does not require any prior knowledge of the subject. The Junior units of study provide an introduction to the earth sciences. The Intermediate and Senior Geology units of study build on the preceding coursework to present a balanced and wide ranging coverage of the subject area. A degree of specialisation is built into the Senior units of study as they are designed especially for students majoring in geology and proposing to pursue a career in that profession.

Geophysics is a component of most of the units of study in Geology but it is also offered as autonomous Senior units of study.

Suitably qualified students may proceed to Honours units of study in either Geology or Geophysics

Textbooks
For details of prescribed textbooks, students should consult the pamphlets relating to various Departmental units of study. The pamphlets are available from the Enquiry Office in the Edgeworth David Building.

Examinations
These are held in June and November.

Geology Junior units of study

Students considering enrolling in these units of study should study the pamphlet entitled 'Junior Units of Study in Geology', which can be obtained from the Enquiry Office in the Edgeworth David Building. It gives details of content, text and reference books, staffing and other relevant matters.

GEOL1001   Earth and Its Environment
6 credit points
Prof P Davies
Prerequisite: See prerequisites for Intermediate Geology.
Assumed knowledge: No previous knowledge of Geology assumed. Offered: February. Classes: 3 lec & prac or tut/wk.
Assessment: One 3hr 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 histo-

ry and evolution of the Earth, and dating sediments and rocks. Laboratory classes and a one day field trip in the Sydney region will involve exercises in observing and describing Earth materials and in interpreting Earth history from geological information, including fossils and maps.

GEOL 1002   Earth Processes and Resources
6 credit points
Associate Professor Keene
Assumed knowledge: No previous knowledge of Geology assumed. Offered: July. Classes: 3 lec & prac or tut/wk.
Assessment: One 3hr 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 Intermediate units of study

GEOL 2001 Plate Tectonics and Materials
8 credit points
Prerequisite: GEOL 1002 or ENV11001. A candidate who has completed 24 credit points of Junior units of study in Physics and Chemistry and who has not taken Junior Geology or ENVl 1001, may apply under section 1 (4) for permission to enrol in GEOL 2001. Offered: February. Classes: 4 lec & 2 prac or tut/wk. Assessment: Two 2hr theory, lab exam, class work, field work.
This unit of study introduces students to new practical techniques that provide a heightened understanding of the concepts introduced in the Junior units of study in Geology. The unit of study will examine the geodynamic processes that control global plate tectonics, the analysis and interpretation of geological structures and the fundamental processes responsible for the origin and evolution of the main types of igneous and sedimentary rocks. Through the analysis of hand specimens and a theoretical practical introduction to the use of the polarising microscope, the unit will also provide an introduction to the methods of optical crystallography, optical mineralogy and mineral identification in common rocks. In addition to laboratory classes there will be a compulsory five day field trip to near Yass, where students will be instructed in methods of geological mapping and the identification of geological objects in the field. Students will be required to pay hostel accommodation for five nights.

GEOL 2002   Resource Exploration
4 credit points
Dr Birch
Prerequisite: GEOL 2001. Offered: July. Classes: 2 lec & 1 prac or tut/wk. Assessment: One 3hr exam, class work.
Materials sourced from mining and fossil fuels are important to the Australian economy and essential parts of our everyday lives. Geological concepts developed in Geology 2001 are used as a basis to understand the basic physical, chemical and biological processess that formed metamorphic rocks, petroleum, coal and ore deposits in Australia. The unit of study also introduces students to geophysics and geophysical techniques used in resource exploration.

GEOL 2003   Fossils and Time
4 credit points
Dr Buick
Prerequisite: 24 credit points of Science units of study. **Offered:** July. **Classes:** 2 lec & 1 prac or tut/wk. **Assessment:** One 3hr theory, class work.
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

BSc

Units of study

Geography
Geology &
Geophysics

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.

GEOL 2004   Environmental Geology: Hazards
4 credit points
Dr Hughes
Prerequisite: 24 credit points of Science units of study. See prerequisites for Senior Geology. Offered: February. Classes: 3 lec/wk & fieldwork. Assessment: One 3hr exam, one field report.
The Earth sciences provide the essential framework for understanding many of the natural and anthropogenic hazards that exist in the human environment. Principles of effective waste (including radioactive) management are presented as a means of mitigating pollution hazard. The unit of study also examines a range of natural hazards that can impact on society, either at a nuisance level (slope erosion, land subsidence) or as a disaster (earthquakes, volcanic eruptions, meteor impact). The unit of study finishes with a number of case studies looking at the geological hazards faced by people living in some of the world's major cities.

GEOL 2005   Environmental Geology: Resources
4 credit points
Dr Birch
Prerequisite: 24 credit points of Science units of study. See prerequisites for Senior Geology. **Offered: July. Classes:** 3 lec/wk & fieldwork. **Assessment:** One 3hr exam.

Australia is a major primary producing nation and mining accounts for a substantial part of its export income. This segment of the environmental geology program is concerned with the application of geological information and techniques in solving conflicts that may arise when new mines are proposed. It shows how geological principles can be used to minimise environmental degradation in areas of active mining. Topics covered include renewable and non-renewable global energy resources, the importance of minerals in an industrialised society, mineral extraction and processing, the environmental impact of mining and mineral processing, site reclamation, recycling, ecologically sustainable development, global climate change and environmental law.

Geology Senior units of study
Many of the Senior units of study in Geology contain a field work component. For more details of this component than shown in the unit of study listings below consult the pamphlet entitled 'Senior Units of Study in Geology', which can be obtained from the Enquiry Office in the Edgeworth David Building.

GEOL 3001   Petrology, Basins and Structure
12 credit points
Dr Clarke
Prerequisite: GEOL 2001 and 2002. **Offered:** February. **Classes:** 12hr of lec & prac/wk. **Assessment:** Two 2hr theory, lab exam, class work, and field work.
This unit of study consists of six sections, igneous petrology, metamorphic petrology, sedimentary environments, structures, tectonics and field mapping. The first three sections contain an in-depth examination of the origin and evolution of the various types of rocks. In the structures module the focus is on the analysis, synthesis and interpretation of different kinds of structural data and surface maps using advanced geometric methods. Students are also introduced to the techniques of kinematic analysis for both brittle and ductile deformation. The tectonics module aims to provide students with a more detailed understanding of the global tectonic theory. It examines active tectonic environments, the structure of the crust in different tectonic settings, processes of mountain building, and the effects of modern and ancient plate boundaries on the evolution of the continents. Core logging skills are taught in laboratory sessions. A seven day field trip will be run over the Easter break to the South Coast of NSW,

where students will be instructed in methods of geological mapping and map interpretation. Students will be required to pay hostel accommodation for five of the nights, and the field trip will involve camping.

GEOL 3002   Stratigraphy, Resources and Australian Geology
8 credit points
Dr Wilkins
Prerequisite: GEOL 3001. Offered: July. Classes: 8hr of lec & prac/wk. Assessment: Two 2hr theory, lab exam, class work.
This unit of study is designed to provide a practical training in specific aspects of resource exploration, and it covers skills used by geologists in the mineral and petroleum industries. It contains modules on the geology of industrial and metalliferous mineral deposits, sedimentary resources, sequence stratigraphy, basin analysis, the use of geophysical methods to delineate buried mineral and hydrocarbon deposits, and a synthesis of the geological evolution of the Australian continent from its earliest beginnings to the present. The latter contains an evaluation of the resource potential of the various periods of geological time.

GEOL 3003   Mineral Exploration
8 credit points
Dr Wilkins
Corequisite: GEOL 3001. Offered: February. Classes: 8hr of lec & prac/wk. Assessment: One 3hr exam, iab, field reports.
This unit of study is designed to provide training in mineral exploration methods through the practical use of geochemical exploration.

Topics covered in geochemical exploration include the mobility of elements in the surficial environment, the stability of minerals, indicator and pathfinder elements, geochemical dispersion patterns characteristic of ore deposits, ore deposit geochemistry, types of geochemical surveys, and the statistical interpretation of geochemical data sets. Topics in geophysical exploration include the principles of magnetic, gravity, resistivity, electromagnetic and induced polarisation techniques in the search for ore deposits. In addition to laboratory classes there will be a five day field trip between the February and July Semesters to an area of known sub-surface mineralisation, close to active mining operations. There, students will plan and execute basic geological, geochemical, magnetic, gravimetric, electromagnetic and electrical prospecting surveys. Data collected in the field will be examined and interpreted both on site and in the laboratory. Students will be required to pay hostel accommodation for five nights.

GEOL 3004   **Paleobiology**
4 credit points
Dr Buick
Prerequisite: GEOL 2003 or 8 credit points of Intermediate Biology. Offered: February. Classes: 4hr of lec & prac/wk. Assessment: One 3000-5000w essay, class work, field work.
This unit of study is aimed at geoscientists, environmental scientists and biologists who are interested in the evolution of life and how it was constrained by environmental events and ecological interactions, and how it provides a basis for assessing modern environmental problems such as a nuclear winter, global warming, the ozone hole and biodiversity destruction. It focuses on the major crises in the paleontological record, such as explosive radiations and mass extinctions, examining causes and effects, evolutionary and ecological influences and outcomes, from the early Archaean to the Recent, and across all groups of organisms. The unit of study is run in seminar style, emphasising critical reading of scientific papers, short oral presentations and group discussions. A weekend field excursion to examine a mass-extinction horizon is also included.

GEOL 3005   Geochemistry and Structure
12 credit points
Prerequisite: GEOL 3001. **Offered:** July. **Classes:** 12hr of lec & prac/wk & field work. **Assessment:** One 3hr exam, lab and class work and/or field work.
This unit of study mvolves two main modules: geochemistry and advanced structure. The geochemistry module examines topics

such as the age and origin of the elements, their cosmic abundance, planet-forming processes, the evolution of the Earth's core and mantle, distribution of trace elements in magmatic rocks, geochronology and isotope geochemistry. This module also examines analytical techniques commonly used in the geosciences including X-ray fluorescence, X-ray diffraction, mass spectrometry, atomic absorption spectrometry, microprobe analysis, neutron activation, and scanning electron microscopy. A portion of the geochemistry module is also dedicated to teaching the techniques and tools used in air-photo interpretation. The structural geology module is designed to give students advanced practical experience in the analysis of multiply deformed terrains. It provides students with advanced techniques in quantitative stress and strain analysis with applications to both brittle and ductile regimes. This unit of study also includes field work and/or a research project involving the geology of New Zealand.

GEOL3006   Petroleum Exploration
4 credit points
Dr Birch
Prerequisite: GEOL 3001. Offered: July. Classes: 4hr of lec & prac/wk. Assessment: One 3hr exam, project.
This unit of study was developed to provide a comprehensive introduction to petroleum exploration. It acquaints students with the exploration techniques currently used in the petroleum industry, including the principles and practice of electrical logging, source rock evaluation and reservoir quality assessment. Problems of fluid migration and timing are examined in relation to source maturation. The unit of study culminates in a comprehensive project in which all the techniques discussed during the unit of study are used to solve a regional petroleum exploration problem.

GEOP 3001   Geophysical Signal Processing
4 credit points
Professor Mason
Prerequisite: 16 credit points of Intermediate Science units of study. Offered: July. Classes: 4hr lec & prac/wk. Assessment: One 2hr exam, class work.
Starting with a discussion of what signals are and how geophysical data are collected, this unit of study covers basic signal definitions and properties, convolution and correlation, numerical transforms, some basic probability and statistics, converting analogue to digital data, re-sampling digital data, and the analysis of digital random data, including spectral density functions and coherence functions. An introduction to systems and digital filters is followed by examples of various filters. The unit of study concludes with a review of the processing of seismic reflection and refraction data.

GEOP 3002   Geodynamics
4 credit points
Dr Müller
Prerequisite: 16 credit points of Intermediate Science units of study. Offered: February. Classes: 4hr lec & prac/wk. Assessment: One 2hr exam, class work.
This unit of study explores the nature and consequences of plate motions on a sphere. It includes a detailed analysis of major geodynamic processes such as plate boundary deformation, earthquake generation, continental rifting, plate subsidence, flexure and uplift, and the thermal evolution of various types of lithosphere

GEOP 3003   Geophysical Exploration A
4 credit points
Prof. Mason
Prerequisite: 16 credit points of Intermediate Science units of study. Offered: February. Classes: 3hr lec & prac/wk and field work.
Assessment: One 3hr exam, lab work, field reports.
This unit of study starts with an introduction to the exploration process and the principles that underlie the geophysical methods used in the search for mineral deposits. Topics examined include the use of gravity, IP, magnetic and electromagnetic methods in mineral exploration, analysis and interpretation of geophysical surveys, and the principles and methods of seismic surveying. The final part of the unit of study discusses boreholes

and drilling, d̲r̲i̲l̲l̲i̲n̲g̲ muds, blowout control, drill stem testing, casing perforation, borehole navigation, mud logging, coring, formation evaluation; wirelining for lithology, porosity, permeability; induction, spontaneous potential and resistivity logs; dipmeters, sonic logs, televiewers, nuclear methods, crosshole correlation, borehole transient electrical method, fundamentals of VSP and reservoir development.

GEOP 3004   Petroleum Geophysics & Basin Analysis
4 credit points
Dr Müller
Prerequisite: 16 credit points of Intermediate Science units of study. Offered: February. Classes: 4hr lec & prac/wk. Assessment: One 3hr exam, lab and class work and/or field work.
Basin analysis is essential for understanding the formation of petroleum source rocks and traps. This course introduces an integrated up-to-date approach to sedimentary basin modelling by combining geophysical and geological data as input for computer models. The course considers different types of basins, such as rift basins formed by lithospheric extension and foreland basins formed near mountain belts, and their relevance for petroleum exploration. Particular emphasis is placed on reconstructing the history of a sedimentary basin by using stratigraphic data derived from wells and seismic reflection profiles. Computer exercises introduce a variety of thermal and mechanical basin models, whose output is compared with observations.

GEOP 3005   Environmental Geophysics
4 credit points
Prof. Mason
Prerequisite: 16 credit points of Intermediate Science units of study. Offered: July. Classes: essentially field based. Assessment: One 1.5hr exam, lab exercises.
This unit of study shows how a whole battery of geophysical techniques can be successfully used in site investigations and in monitoring fluids and pollutants on and beneath the surface. Topics examined in the first part of this unit of study include real and synthetic aperture images, image acquisition from satellites and airborne platforms, radar images, images obtained from magnetic, gravimetric and seismic surveys, two dimensional image processing, human visual systems, image enhancement, image contrast and dynamic range modification, noise control, matched, inverse and Wiener filters, median and other non-linear data adaptive filters, edge detection and image degradation and restoration. The second part of the unit of study is on site assessment and it includes trigonometric surveying, GPS, differential GPS and other electronic surveying techniques, drilling, monitoring and logging of shallow boreholes, groundwater assessment, crosshole surveying with ground penetrating radar, low frequency electromagnetics, direct current electromagnetics, seismic techniques, tomographic image acquisition, importance of uniform coverage in automatic image reduction and the role of forward modelling in the interpretation of sparse images.

GEOP 3006   Geophysical Exploration B
4 credit points
Prof. Mason
Prerequisite: GEOP 3003. Offered: July. Classes: essentially field based. Assessment: One lab, field report.
This is a practical unit of study in the various geophysical exploration methods used in the search for economic mineral deposits. It consists of lectures, practical classes and field work. During the unit of study students will be taken to an area of known sub-surface mineralisation, close to active mining operations, where they will be instructed in the design, implementation and interpretation of geological, magnetic, gravimetric, electromagnetic and electrical prospecting surveys. Data collected in the field will be examined and interpreted both on site and in the laboratory.

Geology Honours
Dr Clarke
Offered: February.
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.

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 Associate Professor Keene or the Head of School.

History and Philosophy of Science

The History and Philosophy of Science units of study are intended to provide a broad, socially relevant appreciation of the scientific enterprise. The educational objective of the units of study is to enable students to stand back from the specialised concerns of their other subjects and gain some perspectives on what science is, how it came to acquire its modern form, and how it fits into contemporary society.

It is envisaged that the units of study will prove relevant to students pursuing any of a large number of possible scientific careers, especially those involving science administration, science reporting or education.

Location

Carslaw Building, Level 4.

Advise on units of study

A member of staff will be available to advise on units of study during the enrolment and orientation periods, either in the enrolment centre or in the History and Philosophy of Science Office.

Handbook

Detailed information on units of study is available from the History and Philosophy of Science Office.

Registration

Students will need to register in tutorials. Arrangement for this will be made in lectures at the beginning of semester.

HPSC 2001 **What is this thing called Science?**
4 credit points
Dr Griffiths
Prerequisite: 24 credit points of Junior units of study. This is a qualifying unit of study for Senior History and Philosophy of Science units of study. Offered: July. Classes: 2 lec & 2 tut/wk.
Assessment: One take-home exam, tutorial assignments.
Based on the best-selling book of the same title, this course critically examines the most important attempts to define the 'scientific method', to draw a line dividing science from non-science and to justify the high status generally accorded to scientific knowledge.
Textbooks
Chalmers, A. What is this thing called Science?

HPSC 2002 **The Birth of Modern Science**
4 credit points
Dr Neal
Prerequisite: 24 credit points of Junior units of study. This is a qualifying unit of study for Senior History and Philosophy of Science units of study. **Offered:** February. **Classes:** 2 lec & 2 tut/wk.
Assessment: One take-home exam, tutorial assignments.
An introduction to the events of the 'scientific revolution' of the seventeenth century, often described as the most important peri-od in the history of science and as one of the most vital stages in human intellectual history.

History and Philosophy of Science Senior units of study

Up to 24 credit points of the following Senior units of study may be taken.

Note: Units of study are offered subject to the availability of staff and on condition that they are chosen by an adequate number of students in each case. Students should consult the 'History and Philosophy of Senior Science Unit of Study Information' leaflet at the beginning of the year for up-to-date information.

NB: Students considering Honours in the History and Philosphy of Science in the following year, should consult the department before chosing Senior year units of study.

HPSC 3001 **History of Physical Sciences**
6 credit points
Qualifying: HPSC 2001 and 2002. **Offered:** February. **Classes:** Two **1** hr lec & one 2hr tut/wk. **Assessment:** One take-home exam, tutorial work.
NB: Other information: Candidates taking this unit of study must complete at least 24 credit points at Senior level in another Science Discipline Area in order to satisfy the requirements for the BSc degree.
Examines some of the maj or episodes in the social and scientific history of the physical sciences, building upon the material covered in HPSC 2002.

HPSC 3002 **History of Biological Sciences**
6 credit points
Dr Griffiths
Qualifying: HPSC 2001 and 2002. **Offered:** July. **Classes:** two 1hr lec & one 2hr tut/wk. **Assessment:** One take-home exam, tutorial work.
NB: Other information: As for HPSC 3001.
Examines some of the major episodes in the social and scientific history of the biological sciences, 1650-1950.

HPSC 3003 **Social Relations of Science A**
4 credit points
Qualifying: HPSC 2001 and 2002. Offered: February. Classes: 1 lec & 1 tut/wk. Assessment: One take-home exam, tutorial work.
NB: Other information: As for HPSC 3001.
An introduction to sociological approaches to science as an institution and the study of social influences on the production of scientific knowledge.

HPSC 3004 **Social Relations of Science B**
4 credit points
Dr Neal
Qualifying: HPSC 2001 and 2002. Prerequisite: HPSC 3003.
Offered: July. Classes: 1 lec & 1 tut/wk. Assessment: One take-home exam, tutorial work.
NB: Other information: As for HPSC 3001.
A continued examination of the topics of HPSC 3003 using more recent and more advanced material.

HPSC 3005 **History and Philosophy of Medical Science**
4 credit points
Dr Hardy
Qualifying: HPSC 2001 and 2002. **Offered:** February. **Classes: 1** lec & 1 tut/wk. **Assessment:** Class work, essay.
NB: Other information: As for HPSC 3001.
An introduction to some of the major episodes in the social and scientific history of medicine, from ancient Greece to the present day.

HPSC 3006 **Scientific Controversies**
4 credit points
Dr Griffiths
Qualifying: HPSC 2001 and 2002. **Offered:** July. **Classes: 1** lec & 1 tut/wk. **Assessment:** Classwork, one 2500w essay.
NB: Other information: As for HPSC 3001.

Scientific discussions are often structured around long-running 'controversies'. This course examines one or more such episodes in the history of science.

HPSC 3007   Science and Ethics
4 credit points
Dr Neal
Qualifying: HPSC 2001 and 2002. Offered: February. Classes: 2hr/wk. Assessment: Classwork (50%), take-home exam (50%).
NB: Other information: As for HPSC 3001.
Focuses on the ethical and philosophical implications of feminism and feminist theory for science.

HPSC 3008   The Nature of Experiment
4 credit points
Qualifying: HPSC 2001 and 2002. Offered: July. Classes: 2hr/wk. Assessment: Classwork (50%), take-home exam (50%).
NB: Other information: As for HPSC 3001.
Not offered in 2000

HPSC 3100   Contemporary Issues A
4 credit points
Qualifying: HPSC 2001 and 2002. Offered: February. Classes: 2 lec/wk. Assessment: Classwork, take-home exam.
NB: Other information: As for HPSC 3001.
An examination of one area of the recent literature in the history and philosophy of science.

HPSC 3101   Contemporary Issues B
4 credit points
Qualifying: HPSC 2001 and 2002. Offered: July. Classes: 2 lec/wk. Assessment: Classwork, take-home exam.
NB: Other information: As for HPSC 3001.
An examination of one area of the recent literature in the history and philosophy of science.

HPSC 3103   Philosophy of the Biological Sciences
4 credit points
Dr Griffiths
Prerequisite: HPSC 2001 and 2002. Offered: July. Classes: 1 lec & 1 tut/wk. Assessment: One tut presentation (50%), one take-home exam.
The major philosophical debates in and about recent biological science, concentrating on evolutionary biology and genetics. Previous study in biology is not assumed.
Textbooks
Sterelny, K & Griffith, P E. Sex and Death: An Introduction to the Philosophy of Biology

History and Philosophy of Science Honours
Students considering Honours in the History and Philosphy of Science, should consult the department before chosing Senior year units of study.
   Students of sufficient merit may be admitted to Honours. They are required to:
   (a) carry out research work under the direction of a supervisor;
   (b) submit a thesis of about 15,000 words on this work;
   (c) complete four two-hour per week single semester units of study including the assessment required;
   (d) attend a fortnightly seminar.
   The requirements are four Options, together with a thesis of approximately 15,000 words on an approved topic, together with attendance at a fortnightly seminar on Research Methods. Students are advised to consult with the History and Philosophy of Science Unit concerning their Options.

Immunology
The Immunology Unit of the Department of Medicine offers Introductory Immunology at Intermediate level. Senior study (Immu 3001, currently BMed 3003) will be available from 2001, subject to Faculty/Senate approval. Further information from Dr Helen Briscoe (phone 9351 7308).

IMMU 2001   Introductory Immunology
4 credit points
Qualifying: 12 credit points of Junior Chemistry and 12 credit points of Junior Biology or, with permission of Head of Department, 24 credit points of Junior study from any of the Science Discipline Areas. Offered: July. Classes: 2hr lec, 2hr tut/wk for 6 wks; 1 hr lec/wk for 6 wks; 2hrs independent study/wk for 5 wks; 3 x 4hr prae sessions. Assessment: One 2hr theory exam (50%), one essay (20%), practical reports and tutorial contributions (30%).
NB: This is a qualifying unit ofstudy for IMMU 3001 (currently BMed 3003).
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 (12 lectures). This includes the nature of the cells and molecules that recognise antigen and how these cells respond at the cellular and molecular levels. Practical and tutorial sessions will illustrate particular concepts introduced in the lecture program. A further 6 lectures and self-directed learning sessions (directed reading and problem-based learning tutorials) will integrate this fundamental information into studies of mechanisms of host defence against infection, transplantation and pregnancy, and dysfunction of the immune system including allergy, immunodeficiency and autoimmune diseases.

Marine Sciences
The Marine Studies Centre offers Intermediate, Senior and Honours units of study of a transdisciplinary nature in the marine sciences. Staff from the School of Biological Sciences and the School of Geosciences teach in the undergraduate program.

MARS 2001   Introductory Marine Science A
4 credit points
Prerequisite: 24 credit points of Junior units of study from Science Discipline Areas. This is a qualifying unit of study for MARS 3001 and 3002. Some options in Senior Marine Science have additional prerequisites. Offered: February. Classes: 3 lec & 1 tut/wk, 1 day excursion, 1/2 day excursion. Assessment: One 3hr exam, classwork.
Introduction to oceanography and its history; the morphology, geology and history of the continental shelves, continental slopes and ocean basins; ocean properties and circulation, ocean-atmosphere and ocean-sea floor relationships.

MARS 2002   Introductory Marine Science B
4 credit points
Prerequisite: As for MARS 2001. Offered: July. Classes: 3 lec & 1 tut/wk, 1 day excursion, 1/2 day excursion. Assessment: One 3hr exam, classwork.
Introduction to physical processes affecting the coastal zone; chemical cycles within the oceans; major biological systems of the oceans; biological adaptation.

Marine Sciences Senior units of study
This program is for Senior students of biology, geology, geography or mathematics who are interested in the marine sciences. It can, however, be taken with a Senior unit of study in any other subject. No special requirement of Junior units of study is laid down.
Internal structure
Students may enrol in either or both semesters (i.e. Marine Science 3001 or 3002 or both). Within the program, options are available in each semester. Students are encouraged to select those in which they have a particular interest, subject to the unavoidable requirement in certain cases that they have completed some prior study in that subject area.
   The options are in the following list. Options are usually provided in the form of three or four lectures together with eight or nine hours' practical or project work and, in some cases, a one hour tutorial each week. Some include an excursion of several days' duration. Not every option is available every year.

BSc
Units of study
Geology & Geophysics
Hist & Phil of *Science*
Immunology
Marine Sciences

List of options

MS 12 Coastal Depositional Environments and Morphodynamics
12 credit points. May not be counted with Geography 3001, students cannot also enrol in MS 67; comprises MS 1 and MS 2.

MS 13 Coastal Depositional Environments and Physical Sedimentology
12 credit points. May not be counted with Geography 3001, comprises MS 1 and MS 3.

MS 15 Coastal Depositional Environments and Marine Biology
12 credit points. May not be counted with Geography 3001, nor with Biology 3102; comprises MS 1 and MS 5.

MS 42 Evolution and Diversity of Australian Biota and Coastal Morphodynamics
12 credit points. May not be counted with Geography 3001, nor with Biology 3102; comprises MS 2 and MS 4.

MS 43 Evolution and Diversity of Australian Biota and Physical Sedimentology
12 credit points. May not be counted with Biology 3102; comprises MS 3 and MS 4.

MS 45 Evolution and Diversity of Australian Biota and Marine Biology
12 credit points. May not be counted with Biology 3102; comprises MS 4 and MS 5; students cannot also enrol in MS 10.

MS 67 Coastal Zone Management and GIS
12 credit points. May not be counted with Geography 3102; comprises MS 6 and MS 7; students cannot also enrol in MS 12.

MS 69 Coastal Zone Management and Palaeoceanography and Sedimentrary Environment
12 credit points. May not be counted with Geography 3102; comprises MS 6 and MS 9.

MS 87 Chemical Process in the Ocean and GIS
12 credit points. May not be counted with Geography 3102; comprises MS 7 and MS 8.

MS 89 Chemical Processes in the Ocean and Palaeoceanography and Sedimentary
12 credit points. Comprises MS 8 and MS.

MS 10 Marine Ecology
12 credit points. May not be counted with Biology 3202; students cannot also enrol in MS 45.

Enrolling in options

Students intending to enrol in only one semester of Senior Marine Sciences courses may not choose only MS 45, MS 12, MS 67 or MS 10.

All enrolments are to be registered with and approved by the Director of the Marine Studies Centre, on the first day of semester.

Notes:

(a) Because of the limited facilities available for the marine biological units of study it may be necessary to restrict the number of students taking any particular option. If this need arises selection will be based on academic merit.

(b) 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

(c) Students intending to enrol in coastal geography options should complete a preliminary enrolment form in the School of Geosciences before first semester commences.

Enrolment and registration

In addition to complying with enrolment procedures required by the University, all students in Senior Marine Sciences must register with the Marine Studies Centre (Room 430 Madsen) during the first week of lectures. Enquires should be made to the Director (Assoc. Prof. Short). All enrolments must also be approved by the Director.

Summaries of options

Students should consult options as listed in the two contributing Schools (Biological Sciences and Geosciences).

Descriptions of options

MS 1 Coastal Depositional Environments
Assoc. Prof. Short
Classes: February Semester weeks 1-7, 3 lec & 1 3hr prac/wk, excursions (over 2 weekends, one 1 day). Assessment: assignments, 1.5hr exam.

The aim of this option is to examine the form and process relationships that generate the world's major coastal deposition environments and to determine their long term evolution through examination of their surface morphology and three dimensional stratigraphy. More specifically, the option will examine sediment transport and deposition, nature and influence of sediment characteristics and the energy regime and morphology of the receiving basin that combines to produce a coastal depositional environment. The long term evolution of particular coastal depositional environments will be examined in the context of variation in the above parameters along with the variation in the Quaternary climate and sea level.

MS 2 Coastal Morphodynamics
Dr Cowell
Classes: February Semester weeks 8-14, 3 lec, 6 hr prac/wk, (excursion over 1 weekend). Assessment: 1 literature assignment, 1 prac assignment, 1.5hrexam.

Coastal morphodynamics is an option in the modeling of complex environmental systems in general, with specific focus on coastal geomorphology. The course deals with the development of models for simulating aggregated processes and associated the morphological behaviour. Principles underlying the models provide a process-based explanation of morphology and stratigraphy from the contrasting depositional environments examined in the companion course Coastal Depositional Environments (MS 1). Practical work involves extensive use of computers. The excursion may be held within Weeks 1-7 of the semester.

MS 3 Physical Sedimentology
Dr Hughes

Classes: February Semester weeks 8-14, 3 lec, 1 tut & 6hr prac/wk, 1 day excursion. Assessment: One 1.5hr exam, classwork.

This option examines the physical processes responsible for sediment erosion, transport and deposition in the marine environment. The focus is on short time-scale processes and products. Both cohesionless (sands) and cohesive (muds) sediment dynamics will be described for a variety of flow regimes including unidirectional ocean currents, bidirectional tides and waves, and turbidity currents. Generic aspects of fluid boundary layers and their modification by sediment transport and bedforms is emphasised. The option concludes with case studies of four marine environments: estuary, shoreface, continental shelf and slope. The case studies are used to illustrate the fluid-sediment interactions that combine to produce the seabed micromorphology (surface texture, bedforms and sediment structure) the characterises each of these environments. The practical classes aim to develop an analytical understanding of the theoretical concepts, and provide skills in data analysis/interpretation suitable for solving a range of applied problems. Field methods and instrumentation will be demonstrated during a field excursion.

MS 4 Evolution and Diversity of the Australian Biota (Core option)

Dr Henwood, Assoc. Prof. Hinde, Dr Hoegh-Guldberg, Dr Kingsford, Prof. Larkum, Prof. Patterson, Prof. Shine, Dr Taylor and others
Classes: Feb Semester, 4 lec & 8hr prac/wk. Timetable 2. Assessment: One 1.5hr exam, assignments, projects.

See Evolution and Diversity of the Australian Biota entry under School of Biological Sciences.

MS 5 Marine Biology Module
Assoc. Prof. Hinde, Dr Hoegh-Guldberg, Dr Kingsford, Prof. Larkum

Qualifying: Biology 2001 or 2901 and 2002 or 2902 or 16 credit points of Intermediate Biology including one of Biology 2003 or 2004 or 2903 or 2904. Classes: February Semester, 4 lec & 8hr prac/wk, field courses. Timetable 2. Assessment: One 1.5hr exam, assignments, projects.

See Marine Biology Module entry under School of Biological Sciences.

MS 6 Coastal Zone Management
Dr Chapman

Classes: July Semester weeks 8-14: 3 lec, 1hr prac & 1 tut/ wk, excursion (over 1 weekend). Assessment: assignments, 1.5hrexam.

The coastal zone provides an ideal area for the study of resources management since virtually all the central concerns of resources management are exemplified in that zone. Hence the structure of the option will be determined by these concerns, with the application to the coastal zone providing the central unifying theme. Critical physical systems and natural hazards in the coastal zone are given due emphasis, and in addition the course addresses ways in which decisions are made about resources management and some of the models which can usefully be employed in this regard.

MS 7 Geographical Information Systems
Dr Cowell

Classes: July Semester weeks 1-7, 3 lec, 6hr prac/wk, excursion (over 1 weekend). Assessment: 1 literature assignment, 1 prac assignment, 1.5hrexam.

Principles involved in the Geographic Information Systems (GIS) are applied to the study of coastal environments. The option involves hands-on experience of GIS computing based around problem- solving exercises that cover various aspects of coastal marine science. Lectures provide background to the techniques employed in these exercises, plus general principles in GIS. These principles include spatial-data structures, transformation and analysis of spatial data, spatial modeling of processes and decision models in coastal management. The decision-support modeling complements the companion course Coastal Zone Management (MS 6). An overview is also given of the information technology upon which the GIS industry is based. Practical work involves extensive use of computers.

MS 8 Chemical Processes in the Oceans
Dr Isern

Prerequisite: 12 credit points of Chemistry. Classes: July Semester weeks 1-6, 4 lec, 1 tut & 2hr prac/wk. Assessment: One 1.5hr exam, classwork.

This option provides an overview of organic and inorganic chemical processes in the oceans, particularly in relation to circulation, sedimentation and biological processes. Topics include properties of seawater, biological cycling of nutrients, carbon and carbonate cycles in the ocean, reactions within the sediments and exchanges with seawater, uses of stable isotopes, glacial-interglacial changes in the ocean chemistry and anthropogenic influences.

MS *9 Palaeoceanography and Sedimentary Environments*
Dr Keene

Classes: July Semester weeks 8-14, 4 lec, 1 tut & 2hr prac/ wk. Assessment: One 1.5hrexam, classwork.

This option covers the processes of erosion and deposition which have shaped the sea floor of planet Earth. It examines the interaction of physical, chemical and biological processes. A variety of continental margins will be compared together with analysis of features on the deep sea floor. The Great Barrier Reef and the role of plants and animals in carbonate sedimentation will form the second half of this option. How and why ocean basin sedimentary deposits have changed through time, particularly the past 100 million years, will be examined.

The aim of this option is to provide the student with skills to analyse sea floor environments and interpret a variety of geological, geophysical, oceanographic and biological data.

Laboratory work will emphasise both techniques of sediment analysis and interpretation of data from direct sampling (Tasman Sea, Deep Sea Drilling Project and the Ocean Drilling Program). Students will develop skills to interpret remote sensing images in the form of side scab sonar, swath mapping of the sea floor and seismic reflection profiling. Includes a one day excursion on Sydney Harbour.

MS 10 Marine Ecology

Dr Dickman, Dr Kingsford, Dr Meats, Prof. Underwood and others

Qualifying: Biology 2001 or 2901 and 2002 or 2902. Classes: July Semester, 4 lec & 8hr prac/wk, one 8-day field course in vacation before the July Sem. Timetable 2. Assessment: One 3hr exam, class work.

Students enrol in Core Ecology, including its field course and the Marine Ecology Module. See entry under School of Biological Sciences.

MARS 3001   Marine Science A
12 credit points
Prerequisite: MARS 2002. There are prerequisites for some options, see options entries. **Offered:** February. **Classes:** See options. **Assessment:** See individual options.
See individual option descriptions.

MARS 3002   Marine Science B
12 credit points
Prerequisite: MARS 2002. There are prerequisites for some options, see option entries. **Offered:** July. **Classes:** See individual options. **Assessment:** See individual options.
See individual option descriptions.

Marine Sciences Honours
Offered: February.
The structure of Honours 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. Thesis work will commence in February and continue to November.

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 Director of the Marine Studies Centre.

School of 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

BSc

Units of study

Marine
Sciences
Mathematics
& Statistics
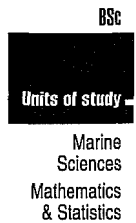
other subjects, and also for training applied mathematicians. While mathematical rigour is not neglected, particular emphasis is given to questions such as the treatment of observational models which are relevant to particular contexts.

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.

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 2002 and STAT 2004.

MATH 1011   Life Sciences Calculus
3 credit points
Assumed knowledge: HSC 2-unit Mathematics. Prohibition: May not be counted with MATH 1901 or 1001. May not be counted by students enrolled in the BSc/BCom combined award course.
Offered: February. Classes: 2 lec & 1 tut/wk. Assessment: One two hour examination, assignments, quizzes and practical work.
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
Assumed knowledge: HSC 2-unit Mathematics. Prohibition: May not be counted with MATH 1002 or 1902. May not be counted by students enrolled in the BSc/BCom combined award course.
Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: One two hour examination, assignments, quizzes and practical work.
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, counting techniques and numerical integration.

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   Life Sciences Difference and Differential Equations
3 credit points
Assumed knowledge: HSC 2-unit Mathematics. Prohibition: May not be counted with MATH 1003 or 1903. May not be counted by students enrolled in the BSc/BCom combined award course.
Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: One two hour examination, assignments, quizzes and practical work.
MATH 1013 is designed to provide tie 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 Sciences Statistics
3 credit points
Assumed knowledge: HSC 2-unit Mathematics. Prohibition: May not be counted with MATH 1905 or 1005. May hot be counted by students enrolled in the BSc/BCom combined award course.
Offered: February. Classes: 2 lec & 1 tut/wk. Assessment: One two hour examination, assignments, quizzes and practical work.
MATH 1015 is designed to provide a thorough preparation in statistics for students of the Life Sciences. It is a unit of study providing three of the twelve credit points required by the Faculty of Science.

This unit of study offes a comprehensive first introduction to data analysis, probability and 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 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 3-unit Mathematics 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 4-unit Mathematics. 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 uiree 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
Assumed knowledge: HSC 3-unit Mathematics. **Prohibition:** May not be counted with MATH 1901 or 1011. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **Assessment:** One two hour examination, assignments, quizzes and practical work.

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 functions of a single variable, limits and continuity, vector functions and functions of two variables. Differential calculus is extended to functions of two variables. Integral calculus concentrates on methods of integration.

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
Assumed knowledge: HSC 3-unit Mathematics. **Prohibition:** May not be counted with MATH 1902 or 1012. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **Assessment:** One two hour examination, assignments, quizzes and practical work.

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

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

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

Textbooks

As set out in the Junior Mathematics Handbook

MATH 1003   Integral Calculus and Modelling
3 credit points
Assumed knowledge: HSC 4-unit Mathematics or MATH 1001. **Prohibition:** May not be counted with MATH 1903 or 1013. **Offered:** • July. **Classes:** 2 lec & 1 tut/wk. **Assessment:** One two hour examination, assignments, quizzes and practical work.

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. Infinite series are introduced with emphasis on Taylor series. 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
Assumed knowledge: HSC 3-unit Mathematics. **Prohibition:** May not be counted with MATH 1904. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **Assessment:** One two hour examination, assignments, quizzes and practical work.

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 requirements 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
Assumed knowledge: HSC 2-unit Mathematics. **Prohibition:** May not be counted with MATH 1905 or 1015. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **Assessment:** One two hour examination, assignments, quizzes and practical work.

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 first introduction to data analysis, probability and 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.

BSc

Units of study

Mathematics & Statistics

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 4-unit Mathematics course is assumed. Students who have a very good result in the equivalent of the HSC 3-unit 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
Assumed knowledge: HSC 4-unit Mathematics or top decile 3-unit Mathematics. **Prohibition:** May not be counted with MATH 1001 or 1011. **Offered:** February. Classes: 2 lec & 1 tut/wk. **Assessment:** One two hour examination, assignments, quizzes and practical work.

MATH 1901 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit of study parallels the normal unit MATH 1001 but goes more deeply into the subject matter and requires more mathematical sophistication.

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
Assumed knowledge: HSC 4-unit Mathematics or top decile 3-unit Mathematics. **Prohibition:** May not be counted with MATH 1002 or 1012. **Offered:** February. Classes: 2 lec & 1 tut/wk. **Assessment:** One two hour examination, assignments, quizzes and practical work.

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 mataematical 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
Assumed knowledge: HSC 4-unit Mathematics or Credit in (MATH 1901 or MATH 1001). **Prohibition:** May not be counted with MATH 1003 or 1013. **Offered:** July. Classes: 2 lec & 1 tut/wk. **Assessment:** One two hour examination, assignments, quizzes and practical work.

MATH 1903 is designed to provide a thorough preparation for further study in mathematics and statistics. It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

This unit of study parallels the normal unit MATH 1003 but goes more deeply into the subject matter and requires more mathematical sophisticaton.

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
Assumed knowledge: HSC 4-unit Mathematics or top decile 3-unit Mathematics. Prohibition: May not be counted with MATH 1004. Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: One two hour examination, assignments, quizzes and practical work.

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
Assumed knowledge: HSC 3-unit Mathematics (50 percentile). Prohibition: May not be counted with MATH 1005 or 1015. Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: One two hour examination, assignments, quizzes and practical work.

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

Mathematics Intermediate units of study
The School of Mathematics provides a range of Intermediate units of study, each worth 4 credit points covering a variety of topics in Pure and Applied Mathematics. Students may take up to 8 units of study (32 credit points) in Intermediate Mathematics units of study and may combine them with up to 4 units of study(16 credit points) in Intermediate Statistics. A normal Intermediate load in a discipline is 16 credit points and this is the <u>minimum</u> that should be undertaken by anyone intending to specialise in Senior mathematics.

The units of stady 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 4 credit points)
- Analysis MATH 2007
- Analysis (Advanced) MATH 2907
- Differential Equations and Group Theory (Advanced) MATH 2908
- Fourier Series and Differential Equations MATH 2005
- Graph Theory MATH 2009
- Introduction to Modern Algebra MATH 2008
- Introduction to Nonlinear Systems and Chaos MATH 2006
- Introduction to Nonlinear Systems and Chaos (Advanced) MATH 2906
- Linear Algebra (Advanced) MATH 2902
- Matrix Applications MATH 2002
- Vector Calculus and Complex Variables MATH 2001
- Vector Calculus and Complex Variables (Advanced) MATH 2901

Applied Units of Study (each 4 credit points)
- Financial Mathematics MATH 2033
- Financial Mathematics (Advanced) MATH 2933
- Fourier Series and Differential Equations MATH 2005
- Introduction to Mathematical Computing MATH 2003
- Introduction to Mathematical Computing (Advanced) MATH 2903
- Introduction to Nonlinear Systems and Chaos MATH 2006
- Introduction to Nonlinear Systems and Chaos (Advanced) MATH 2906
- Lagrangian Dynamics MATH 2004
- Lagrangian Dynamics (Advanced) MATH 2904
- Mathematical Methods (Advanced) MATH 2905
- Matrix Applications MATH 2002
- Optimisation MATH 2010
- Vector Calculus and Complex Variables MATH 2001
- Vector Calculus and Complex Variables (Advanced) MATH 2901

Relation to other units of study and recommendations

In general, 2 units of study (8 credit points) of Intermediate mathematics are needed to progress to a Normal Senior mathematics unit of study, and 3 units of study (12 credit points) of Intermediate mathematics to progress to an Advanced Senior unit of study.

If your major interest is in mathematics, then you are strongly encouraged to enrol in 8 units of study (32 credit points) 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 should choose at least 4 units of study from the Applied list above and should include MATH (2001 or 2901) and MATH (2005 or 2905). The standard combination of units of study for students wishing to take a full load of Intermediate Applied Mathematics is as follows:

At Normal level: 2001+ (2003 or 2006) + 2005 + (2004 or 2010).

At Advanced level: 2901 + (2903 or 2906) + 2905 + 2904.

Students intending to specialise in Pure Mathematics should choose at least 4 units of study from the Pure list above and should include MATH 2002 or 2902 and 2008 or 2908. Other recommended choices would be 2007 or 2907. The standard combination of units of study for students wishing to take a full load of Intermediate Pure Mathematics is as follows:

At Normal level: (2001 or 2009) + 2002 + (2005 or 2007) + 2008.

At Advanced level: 2901 + 2902 + 2907 + 2908.

Computer Science students may like to include MATH 2009 among their choices.

Physics students would be well-advised to choose MATH 2001 or 2901, and 2005 or 2905.

Prospective teachers of mathematics should consider MATH 2009, and 2007 or 2907.

MATH 2001   Vector Calculus and Complex Variables
4 credit points

Prerequisite: MATH (1001 or 1901) and (1002 or 1902) and (1003 or 1903). Prohibition: May not be counted with MATH 2901. Offered: February. Classes: 3 lec & 1 tut/wk. Assessment: One 2hr exam, assignments, tutorial participation, 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

Prerequisite: MATH 1002 or 1902 or Distinction in MATH 1012. Prohibition: May not be counted with MATH 2902. Offered: February. Classes: 2 lec, 1 tut & 1 computer lab/wk. Assessment: One 2hr exam, assignments, tutorial participation, tutorial quizzes.

This unit of study covers systems of linear equations, vector spaces and eigenspaces. In linear equations the topics include existence of solutions, uniqueness, numerical solution, scaled partial pivoting, and residual correction. In vector spaces the topics include subspaces, linear combinations, spanning set, linear dependence, basis, dimension, Lagrange polynomials, linear transformations, kernel, image space, and rank. In eigenspaces the topics include characteristic equation, computation of eigenspaces, similar matrices, diagonalisation, difference equations, coupled differential equations, iterative solution of AX=B; numerical evaluation, power method.

MATH 2003   Introduction to Mathematical Computing
4 credit points

Prerequisite: MATH (1001 or 1901) and (1002 or 1902) and (1003 or 1903). **Prohibition:** May not be counted with MATH 2903. **Offered:** February. **Classes:** 1 lec & 3 computer lab/wk. **Assessment:** One 2hr exam, assignments, computer lab participation.

This unit of study consists of two segments, one devoted to computer simulation and modelling and the other to applied computer algebra. In the first, mathematical models will be set up for a range of problems, such as the minimisation of factory pollutants, determination of drug regimes for a diabetic, the modelling of stars, biological patterns and chaos. Students will use computer simulations to explore solutions. The emphasis will be on modelling, rather than programming. The second segment gives hands-on experience with a computer algebra program. Students work through a set of interactive lessons showing them the potential of such programs. Students are required to write programs to solve applied mathematical problems that would be intractable if attempted solely by pen and paper.

MATH 2004   Lagrangian Dynamics
4 credit points

Prerequisite: MATH 2001 or 2901. Prohibition: May not be counted with MATH 2904. Offered: July. Classes: 2 lec, 1 prac & 1 tut/wk. Assessment: 2hr exam (80%), assignments (20%).

This unit of study provides a first course in dynamics from a higher standpoint. It demonstrates that Newton's laws of motion can be derived from a variational principle. The advantage offered by the Lagrangian formulation in solving for the motion is emphasised. The applications, which include planetary dynamics, illustrate the basic concepts of Newtonian dynamics such as conservation laws. Small oscillations about equnbrium states are treated as part of linear stabiUty theory.

MATH 2005   Fourier Series and Differential Equations
4 credit points

Prerequisite: MATH (1001 or 1901) and MATH (1002 or 1902) and MATH (1003 or 1903). **Prohibition:** May not be counted with MATH 2905. **Offered:** July. **Classes:** 3 lec & 1 tut/wk. **Assessment:** One 2hr exam, assignments.

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 2006   Introduction to Nonlinear Systems and Chaos
4 credit points
Prerequisite: MATH (1001 or 1901) and (1002 or 1902) and (1003 or 1903) or (Credit in MATH 1011 and 1012 and 1013). **Prohibition:** May not be counted with MATH 2906. **Offered:** February. **Classes:** 2 lec, 1 tut & 1 computer tut/wk. **Assessment:** 2hr exam, assignments, computer lab participation.

This unit of study aims to provide an introduction to the simplest cases of nonlinear dynamics and chaos and their use in modelling systems in a variety of applications taken from chemistry, biology, physiology and economics. Topics covered include first order finite difference equations, bifurcations, chaos, fractals, phase portrait analysis of one and two dimensional differential equations, fixed points, analysis of stability. The computer labs use the Mathematica software package.

MATH 2007   Analysis
4 credit points
Prerequisite: MATH (1001 or 1901) and (1003 or 1903) or Distinction average in MATH 1011 and 1013. Prohibition: May not be counted with MATH 2907. Offered: July. Classes: 3 lec & 1 tut/wk. Assessment: One 2hr exam, assignments.

This unit of study is concerned with sequences and series. Topics include the definition of the limit of a sequence, the principle of monotonic convergence, elementary limit theorems, convergence of an infinite series, the comparison and integral tests; absolute convergence, the ratio test and Taylor Series. The last part is devoted to series of complex terms, dealing with power series and radius of convergence.

MATH 2008   Introduction to Modern Algebra
4 credit points
Prerequisite: MATH 2002 or 2902. Prohibition: May not be counted with MATH 2908. Offered: July. Classes: 2 lec, 1 tut & 1 computer lab/wk. Assessment: One 2hr exam, assignments.

The major topics in this unit of study are inner product spaces and groups. First, it treats the geometric and algebraic properties of inner product spaces and then the geometrical and combinatorial background to groups. Topics covered include the definitions and elementary properties of groups, subgroups, direct products, the permutation, symmetric and cyclic groups, isomorphisms and homomorphisms, cosets, Lagrange's theorem, conjugate elements, rotations and reflections in the plane, and symmetries of an n-gon.

MATH 2009 Graph Theory
4 credit points
Prerequisite: 6 credit points of Junior Mathematics (at the Distinction level in Life Sciences units). **Offered:** February. **Classes:** 3 lec & 1 tut/wk. **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 2010   Optimisation
4 credit points
Prerequisite: MATH (1001 or 1901) and (1002 or 1902) and (1003 or 1903) (strongly advise MATH 2002 or 2902). **Prohibition:** May not be counted with Econometrics 3510 Operations Research A. **Offered:** July. **Classes:** 3 lec & 1 tut/wk. **Assessment:** One 2hr exam, assignments.

This unit of study looks at practical optimisation problems. Theory developed in lectures will be complemented by workstation laboratory sessions using Matlab. Minimal computing experience will be required. Topics will be chosen from linear programming and the simplex algorithm, transportation problems, constrained and unconstrained minimisation of functions, search methods, dynamical programming, least-squares and singular-value decomposition.

MATH 2033   Financial Mathematics I
4 credit points
Prerequisite: MATH (1001 or 1901) and MATH (1002 or 1902) and MATH (1003 or 1903) and MATH (1005 or 1905). Offered: February. Classes: 2 lec, 1 tut & 0.5 comp lab/wk. Assessment: 2hr exam (50%, quizzes (25%), assignment (10%), Computer project (15%).

This unit of study is an introduction to financial mathematics with the main emphasis being on mathematical and statistical techniques used to solve problems of relevance to the finance industry. Topics covered include: riskless interest rate models, present and future value factors, arbitrage, solution of general cash-flow problems in both discrete and continuous time, analysis of bonds, simple optimisation problems in finance, modelling of risky assets, expectations hypothesis, utility theory, state space security price modelling, introduction to options. Mamematical techniques include: solving difference and differential equations, advanced integration and summation techniques, linear and dynamic programming, method of Lagrange multipliers, calculation of distributions and expectations of random variables, linear algebra methods, analysis of simple random walks.

MATH 2901   Vector Calculus and Complex Variables (Advanced)
4 credit points
Prerequisite: MATH (1901 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or Credit in 1003). Corequisite: Strongly advise MATH 2002 or MATH 2902. Prohibition: May not be counted with MATH 2001. Offered: February. Classes: 3 lec & 1 tut/wk. Assessment: One 2hr exam, assignments.

This unit of study is designed to provide the basic tools needed for studying functions of two or more real variables and also an introduction to functions of one complex variable. These subjects are fundamental to many areas of Pure and Applied Mathematics, and are essential for students in Science and Engineering courses. Topics in functions of several variables include the following: local maxima and minima, Language multiples, inverse function theorem, Jacobians, double integrals, change of variables, triple integrals, line integrals, Green's theorem, surface integrals, Stokes' theorem, triple integrals, Gauss' Theorem, multiple integrals. Elementary complex variable theory includes complex line integrals, Cauchy's Theorem and Integral Formula, residues and real improper integrals.

MATH 2902   Linear Algebra (Advanced)
4 credit points
Prerequisite: 12 credit points of Junior Mathematics, including MATH 1902 or Credit in 1002. Prohibition: May not be counted with MATH 2002. Offered: February. Classes: 3 lec & 1 tut/wk. Assessment: One 2hr exam, assignments, three quizzes.

This unit of study is primarily concerned with hnear transformations. Abstract vector spaces are introduced as the correct context in which to discuss linear transformations, and the basic structure theorems for finite dimensional vector spaces are proved. The connections between matrices and linear transformations are investigated. Determinants, introduced in first year,

are revised and investigated further. Eigenvalues and eigenvectors are discussed and their usefulness for diagonalizing hnear transformations is shown. Diagonalisation techniques are applied to solve simple examples of simultaneous differential equations. Later topics include the Jordon normal form and the theory of inner product spaces.

MATH 2903 Introduction to Mathematical Computing (Advanced)
4 credit points
Prerequisite: MATH (1901 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or Credit in 1003). **Prohibition:** May not be counted with MATH 2003. **Offered:** February. Classes: 1 lec & 3 computer lab/wk. **Assessment:** One 2hr exam, assignments, computer lab participation.
The content of this unit of study parallels that of MATH 2003.

MATH 2904 Lagrangian Dynamics (Advanced)
4 credit points
Prerequisite: MATH 2901 or Credit in MATH 2001. **Prohibition:** May not be counted with MATH 2004. **Offered:** July. Classes: 3 lec & 1 tut/wk. **Assessment:** One 2hr exam (70%), assignments (20%), project (10%).
The content of this unit of study parallels that of MATH 2004.

MATH 2905 Mathematical Methods (Advanced)
4 credit points
Prerequisite: MATH 2901 or Credit in MATH 2001. **Prohibition:** May not be counted with MATH 2005. **Offered:** July. **Classes:** 3 lec & 1 tut/wk. **Assessment:** One 2hr exam, assignments.
This unit of study is essentially an advanced version of MATH 2005, the emphasis being on solutions of differential equations in Applied Mathematics. The theory of ordinary differential equations is developed for second order linear, including series solutions, special functions and Laplace transforms. Some use is made of computer programs such as Mathematica. Methods for partial differential equations and boundary-value problems include separation of variables, Fourier series and transforms.

MATH 2906 Introduction to Nonlinear Systems and Chaos(Advanced)
4 credit points
Prerequisite: MATH (1901 or Credit in 1001) and (1902 or Credit in 1002) and (1903 or Credit in 1003). **Prohibition:** May not be counted with MATH 2006. **Offered:** February. Classes: 2 lec, 1 tut & 1 computer tut/wk. **Assessment:** 2hr exam, assignments, computer lab participation.
The content of this unit of study parallels that of MATH 2006.

MATH 2907 Analysis (Advanced)
4 credit points
Prerequisite: MATH (1901 or Credit in 1001) and (1903 or Credit in 1003) (MATH 2901 or 2001 strongly advised). **Prohibition:** May not be counted with MATH 2007. **Offered:** July. Classes: 3 lec & 1 tut/wk. **Assessment:** One 2hr exam, assignments.

The aim of the unit of study is to provide a solid grounding to the general theory of infinite processes. We study in a concrete way the limiting behaviour of sequences, series and functions via interesting and enduring examples from classical analysis. This background is essential to understanding the more abstract theories which are studied in third year and beyond, and their myriad of applications in Science, Engineering, Statistics and Economics. Topics will include convergence of sequences and series, power series of real and complex variables, uniform convergence of sequences and series of functions, and Fourier series with applications.

MATH 2908 Differential Equations and Group Theory (Advanced)
4 credit points
Prerequisite: MATH 2902. **Prohibition:** May not be counted with MATH 2008. **Offered:** July. Classes: 3 lec & 1 tut/wk. **Assessment:** One 2hr exam, assignments.
There are two distinct strands in this unit of study which run concurrently. The differential equations strand develops and applies the MATH 2902 unit of study, using the theory of eigenvalues and eigenvectors in the solution of differential equations.

Matrix exponential and Jordan decomposition are used to solve linear systems of differential equations, which occur naturally in many branches of Science and Engineering. In the group theory strand topics include subgroups, equivalence relations, cosets, Lagrange's Theorem, homomorphisms, normal subgroups, quotient groups, isomorphism theorems, commutators, finite abelian groups, internal and external direct products, extensions, composition series, Jordan-Hoelder Theorem, Sylow Theorems, solvable and nilpotent groups.

MATH 2933 Financial Mathematics I (Advanced)
4 credit points
Prerequisite: MATH (1901 or credit in 1001) and MATH (1902 or credit in 1002) and MATH (1903 or credit in 1003) and MATH (1905 or credit in 1005). **Offered:** February. Classes: 2 lec, 1 tut & 0.5 comp lab/wk. **Assessment:** 2hr exam (50%), quizzes (25%), assignment (10%), Computer project (15%).
The content of this unit of study parallels that of MATH 2033, but students will be required to undertake all problem solving and assessment tasks at a more advanced level. Some additional topics may also be included.

Statistics Intermediate units of study
The School of Mathematics and Statistics provides Intermediate units of study, each worth 4 credit points, in Statistics. Students may take up to 4 units of study (16 credit points) in Intermediate Statistics, and may combine them with up to 8 units of study (32 credit points) in Intermediate Mathematics. A normal Intermediate load in a discipline is 16 credit points and students intending to specialise in Senior Statistics should take the 4 units of study (16 credit points) of Intermediate Statistics.

Some topics are offered at Normal and Advanced levels and may not be counted together.

The units of study (each 4 credit points) are listed below:
February Semester
- Statistical Distributions STAT 2001
- Introduction to Probability (Advanced) STAT 2901
- Data Analysis STAT 2002

July Semester
- Estimation Theory STAT 2003
- Estimation Theory (Advanced) STAT 2903
- Hypothesis Testing STAT 2004

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
In general at least 2 units of study (8 credit points) of Intermediate Statistics together with the units of study Mathematics 2001 or 2901 are prerequisites for progression to a normal Senior Statistics unit of study. Mathematics 2002 or 2902 is desirable, in addition.

If your major interest is statistics, then you are encouraged to enrol in 4 units of study (16 credit points) in Intermediate Statistics. If you are considering doing Honours in Statistics, these units of study should include some Advanced units of study, and choices from Intermediate Mathematics should include at least Mathematics 2001 or 2901 and Mathematics 2002 or 2902.

If you do not intend to major in Statistics but want a solid introduction to Applied Statistics, you should take STAT 2002 in your first semester and STAT 2004 in your second semester. This allows you the option of continuing with STAT 3002 and STAT 3004 at Senior level.

STAT 2001 Statistical Distributions
4 credit points
Prerequisite: MATH (1003 or 1903 or Credit in 1011) and MATH (1005 or 1905 or 1015). **Prohibition:** May not be counted with STAT 2901. **Offered:** February. Classes: 2 lec & 1tut/wk. **Assessment:** 2hr exam, assignments, tutorial participation.
NB: Change of name subject to Faculty approval.

BSc

Units of study

Mathematics & Statistics

Distribution theory for discrete and continuous random variables, providing the probabilistic basis for the treatment of samples.

STAT 2002   Data Analysis
4 credit points
Prerequisite: MATH 1005 or 1905 or 1015 (or STAT 1021 for Arts students). **Offered:** February. **Classes:** 2 lec & 1tut & 1 computer lab/wk. **Assessment:** 2hr exam, assignments, tutorial participation, one 1hr computer practical exam.
Exploratory data analysis and an introduction to the use of a statistical computing package.

STAT 2003   Estimation Theory
4 credit points
Prerequisite: STAT 2001 or 2901. **Prohibition:** May not be counted with STAT 2903. **Offered:** July. **Classes:** 2 lec & 1tut/wk. **Assessment:** 2hr exam, assignments.
Bivariate distribution theory, estimation, dependence, maximum likelihood estimation and sampling theory.

STAT 2004 Hypothesis Testing
4 credit points
Prerequisite: STAT 2002. **Offered:** July. **Classes:** 2 lec & 1 tut & 1 computer lab/wk. **Assessment:** 2hr exam, assignments, computer lab participation, one 1 hr computer practical exam.
Tests of hypotheses about Normal models, including Analysis of Variance, non parametric tests, and regression theory.

STAT 2901   Introduction to Probability (Advanced)
4 credit points
Prerequisite: MATH (1903 or Credit in 1003) and MATH (1905 or Credit in 1005). **Prohibition:** May not be counted with STAT 2001. **Offered:** February. **Classes:** 2 lec & 2 tut/wk. **Assessment:** 3hr exam, assignments.
Topics in STAT 2001 are treated at an Advanced level, with extensions.

STAT 2903   Estimation Theory (Advanced)
4 credit points
Prerequisite: STAT 2901 or Credit in STAT 2001. **Prohibition:** May not be counted with STAT 2003. **Offered:** July. **Classes:** 2 lec & 1tut/wk. **Assessment:** 3hr exam, assignments.
Topics in STAT 2003 are treated at an Advanced level, with extensions.

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) 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 consult 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 Year 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)
February Semester
- Algebra I (Advanced) MATH 3902
- Categories and Computer Science (Advanced) MATH 3905
- 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

July Semester
- Algebra H (Advanced) MATH 3907
- Coding Theory MATH 3007
- Combinatorics (Advanced) MATH 3912
- Computational Algebra (Advanced) MATH 3913
- Differential Analysis (Advanced) MATH 3911
- Financial Mathematics 2 MATH 3015
- Financial Mathematics 2 (Advanced) MATH 3933
- Geometry MATH 3006
- Group Representation Theory (Advanced) MATH 3906
- Information Theory MATH 3010
- Lebesgue Integration & Fourier Analysis (Adv.) MATH 3909
- Nonlinear Analysis (Advanced) MATH 3908
- Number Theory MATH 3009
- Real Variables MATH 3008

Applied units of study (each 4 credit points)
February Semester
- Differential Geometry (Advanced) MATH 3903
- Fluid Dynamics (Advanced) MATH 3914
- History of Mathematical Ideas MATH 3004
- Mathematical Computing MATH 3016
- Mathematical Computing I (Advanced) MATH 3916
- Mathematical Methods (Advanced) MATH 3915
- Signal Processing MATH 3019
- Signal Processing (Advanced) MATH 3919

July Semester
- 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 Computing II (Advanced) MATH 3916
- Nonlinear Analysis (Advanced) MATH 3908
- Nonlinear Systems and Biomathematics MATH 3020
- Nonlinear Systems and Biomathematics (Advanced) MATH 3920
- Partial Differential Equations and Waves MATH 3018

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 coodinator.

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, 3912, 3015 or 3933, 3016 or 3916, 3019 or 3919.

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.

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
Prerequisite: 8 credit points of Intermediate Mathematics.
Prohibition: May not be counted with MATH 3901. **Offered:**
February. **Classes:** 2 lec & 1 tut/wk. **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
Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2008 or 2908). Prohibition: May not be counted with MATH 3902. Offered: February. Classes: 2 lec & 1 tut/wk. 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. The tutorials are used to introduce students to the computer algebra package MAGMA.

MATH 3003   Ordinary Differential Equations
4 credit points
Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902, with 2001 or 2901). **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **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 3004   History of Mathematical Ideas
4 credit points
Prerequisite: 8 credit points of Intermediate Mathematics. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **Assessment:** One 2hr exam, 2500w essay, tut presentation.
This unit of study looks at the evolution of some basic mathematical concepts: one of the goals is a better understanding of mathematics itself. The main theme is the development of the ideas underlying the calculus from Newton to Hausdorff, over the period 1650 to 1914: the work of Newton, Leibniz, Euler, Lagrange, Cauchy and Weierstrass is discussed in some detail. Independent research is an important part of the work of the unit: more than half of the assessment comes from the essay and the tutorial paper which each student must complete.

MATH 3005   Logic
4 credit points
Prerequisite: (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. Offered: February. Classes: 2 lec & 1 tut/wk. 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
Prerequisite: 8 units of Intermediate Mathematics (strongly advise MATH 1902 or 1002). Offered: July. Classes: 2 lec & 1 tut/wk. 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 Euclidiean and projective planes.

MATH 3007   Coding Theory
4 credit points
Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902). Offered: July. Classes: 2 lec & 1 tut/wk. 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
Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2007 or 2901 or 2907). **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **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   NumberTheory
4 credit points
Prerequisite: 8 credit points of Intermediate Mathematics. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **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).

BSc

Units of study

Mathematics
& Statistics

MATH 3010 **Information Theory**
4 credit points
Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901 and some probability theory). **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **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 tie 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
Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 2033 or 2933 or 2010 and some probability theory). **Prohibition:** May not be counted with MATH 3933. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **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 wifli 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
Prerequisite: 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903. Prohibition: May not be counted with MATH 3916. Offered: February. Classes: 2 lec & 1 tut/wk. 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
Prerequisite: MATH (2001 or 2901) and MATH (2005 or 2905). **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **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
Prerequisite: MATH (2001 or 2901) and MATH (2005 or 2905). **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **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 ap-

plication. 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 aliassing, filter design and the basics of image processing.

MATH 3020 **Nonlinear Systems and Biomathematics**
4 credit points
Prerequisite: 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. Offered: July. Classes: 2 lec & 1 tut/wk. 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
Prerequisite: 12 credit points of Intermediate Mathematics (strongly advise MATH 2907). **Prohibition:** May not be counted with MATH 3001. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **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 tie 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
Prerequisite: 12 credit points of Intermediate Mathematics (strongly advise MATH 2902). **Prohibition:** May not be counted with MATH 3002. **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **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 bisection 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 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
Prerequisite: 12 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901, with MATH 3001 or 3901). **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **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 R3, 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
Prerequisite: 12 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901, with MATH 3001 or 3901). **Offered:** February. **Classes:** 2 lec & 1 tut/wk. **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 3905 Categories and Computer Science (Advanced)
4 credit points
Prerequisite: 12 credit points of Intermediate Mathematics.
Offered: February. Classes: 2 lec & 1 tut/wk. **Assessment:** One 2hr exam, assignments.

Category theory was born in the 1940's as an offshoot of algebraic topology, but since then it has become increasingly clear that it provides a rich and powerful language which can be applied to many areas both inside mathematics and beyond it. One area in which this has proved particularly fruitful is theoretical computer science. This unit of study will provide an introduction to some of the main concepts of category theory, drawing on examples from botli mathematics and computer science as motivation. Topics may include: categories, functors, free categories, generators and relations, natural transformations, adjunctions, duality, group actions, imperative programs, and automata.

MATH 3906 Group Representation Theory (Advanced)
4 credit points
Prerequisite: 12 credit points of Intermediate Mathematics (strongly advise MATH 3902). Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: One 2hr exam, assignments.

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 provide the algebraic machinery for this decomposition, is the main topic of the unit of study.

This unit of study is only offered in odd years.

MATH 3907 Algebra II (Advanced)
4 credit points
Prerequisite: 12 credit points of Intermediate Mathematics (strongly advise MATH 3002 or 3902). Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: One 2hr exam, assignments.

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
Prerequisite: 12 credit points of Intermediate Mathematics (strongly advise MATH 3901). Offered: July. Classes: 2 lec & 1 tut/wk. 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 spparently 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 Integration and Fourier Analysis (Advanced)
4 credit points
Prerequisite: 12 credit points of Intermediate Mathematics (strongly advise MATH 2907 and MATH 3901). Offered: July. Classes: 2 lec & 1 tut/wk. 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 expectation, radon-Nikodym derivative, conditional probability, product measure, convolution, Fourier transform and Fourier inversion.

MATH 3911 Differential Analysis (Advanced)
4 credit points
Prerequisite: 12 credit points of Intermediate Mathematics (strongly advise MATH 2901 and 3902). Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: One 2hr exam, assignments.

Two functions defined in a neighbourhood of the origin of Rn are said to be equivalent if they differ by a change of coordinates. In the simplest cases of regular points or nondegenerate singular points the function is equivalent to a linear form or a quadratic form respectively (Morse Lemma). The unit of study covers several extensions of these classical results and provides an introduction to the so-called 'elementary catastrophes' of Thorn.

This unit of study is not offered every year.

MATH 3912 Combinatorics (Advanced)
4 credit points
Prerequisite: 12 credit points of Intermediate Mathematics (strongly advise MATH 2902). Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: Generally one 2hr exam, assignments.

This course is an introduction to enumerative combinatorics. It begins with a study of some of the important numbers that arise in counting: binomial and multinomial coefficients, Stirling numbers, Fibonacci numbers, etc, in particular in the context of counting functions between finite sets, where functions and sets have special properties. The main tools useful in enumeration problems, including the principle of inclusion-exclusion, generating functions, calculus of differences, are discussed. A feature of the course is a detailed account of Polya's Theory of counting classes of objects possessing some symmetry, for example isomers in chemistry, or non-isomorphic finite simple graphs.

BSc
Units of study
Mathematics & Statistics

MATH 3913   Computational Algebra (Advanced)
4 credit points
Prerequisite: 12 credit points of Intermediate Mathematics (strongly advise MATH 3002 or 3902). Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: One 2hr exam, assignments.
Traditional numerical computation in Science and Engineering is concerned with the solution of those problems which can be reduced to calculations involving limited precision approximations to elements belonging to the real or complex fields. By way of contrast, computational algebra is concerned with techniques for the solution of 'non-numerical' problems. Typical examples of such problems are factoring a polynomial with integer coefficients into irreducible factors, finding the indefinite integral (if it exists) of a function, and determining exact solutions of systems of polynomial equations. This unit of study examines the fundamental algorithms for perforating exact computation in the ring of integers, various R-modules and polynomial rings. Applications in areas such as cryptography, indefinite integration and robotics may also be briefly reviewed.

MATH 3914   Fluid Dynamics (Advanced)
4 credit points
Prerequisite: MATH (2901 or credit in 2001) and MATH (2905 or credit in 2005). Offered: February. Classes: 2 lec & 1 tut/wk. 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
Prerequisite: MATH (2901 or credit in 2001) and MATH (2905 or credit in 2005). Offered: February. Classes: 2 lec & 1 tut/wk. 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
Prerequisite: 8 units of Intermediate Mathematics and one of MATH 1903 or Credit in MATH 1003. Prohibition: May not be counted with MATH 3016. Offered: February. Classes: 2 lec & 1 tut/wk. Assessment: One 2hr exam, assignments.
See entry for MATH 3016 Mathematical Computing I.

MATH 3917   Hamiltonian Dynamics (Advanced)
4 credit points
Prerequisite: MATH 2904 or Credit in MATH 2004. Offered: July. Classes: 2 lec & 1 hr tut/wk. 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 Hamil-

tonian systems is given. In the last part the use of Pontriagin's principle in optimisation and control theory is discussed.

MATH 3918   Mathematical Computing II (Advanced)
4 credit points
Prerequisite: MATH 3016 or Engineering Mathematics 2052. Offered: July. Classes: 1 lec & 2 computer lab/wk. Assessment: 3 computer projects.
In this unit of study, students solve computational problems in applied mathematics where numerical or computer techniques are required for their solution. These problems are to be chosen from areas such as geophysical and astrophysical fluid dynamics, mathematical biology, neural networks, industrial mathematics and data analysis.

MATH 3919   Signal Processing (Advanced)
4 credit points
Prerequisite: MATH 2905 or Credit in MATH 2005. Prohibition: May not be counted with MATH 3019. Offered: February. Classes: 2 lec & 1 tut/wk. Assessment: One 2hr exam, assignments, computer project.
See entry for MATH 3019 Signal Processing.

MATH 3920   Nonlinear Systems and Biomathematics (Advanced)
4 credit points
Prerequisite: 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 1003 and 1004. Prohibition: May not be counted with MATH 3020. Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: One 2hr exam, assignments.
See entry for MATH 3020 Nonlinear Systems and Biomathematics.

MATH 3933   Financial Mathematics 2 (Advanced)
4 credit points
Prerequisite: 8 credit points of Intermediate Mathematics (strongly advise MATH 2933 or Credit in 2033 and MATH 2010 and some probability theory). Prohibition: May not be counted with MATH 3015. Offered: July. Classes: 2 lec & 1 tut/wk. 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 specialise 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
- Statistical Theory (Advanced) STAT 3901
- Applied Linear Models STAT 3002
- Linear Models (Advanced) STAT 3902
- Time Series Analysis STAT 3003

July Semester
- Applied Stochastic Processes STAT 3005
- Markov Processes (Advanced) STAT 3905
- Design of Experiments STAT 3004
- Sampling Theory and Categorical Data STAT 3006
- Multivariate Analysis (Advanced) STAT 3907 (Not offered in 2000)

Further information follows, whilst details of unit of study structure, content, and assessment procedures are provided in the Third Year Unit 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 all available 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
Prerequisite: MATH 2001 or 2901 and STAT 2003 or 2903.
Prohibition: May not be counted with STAT 3901. **Offered:** February. Classes: 2 lec & 1 tut/wk. **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
Prerequisite: STAT 2004 and MATH 1002 or 1902 (or STAT 1022 for Arts students). **Prohibition:** May not be counted with STAT 3902. **Offered:** February. Classes: 2 lec & 1 tut & 1 computer lab/wk. **Assessment:** One 2hr exam, assignments, one 1 hr computer practical exam.

Multiple regression, principal components, MANOVA, discriminant analysis.

STAT 3003 **Time Series Analysis**
4 credit points
Prerequisite: STAT 2003 or 2903. **Offered:** February. Classes: 2 lec & 1 tut & 1 computer lab/wk. **Assessment:** One 2hr exam, assignments.

Modelling and analysing time-dependent situations containing some dependence structure, ARMA Models, introduction to spectral theory.

STAT 3004 **Design of Experiments**
4 credit points
Prerequisite: STAT 3002 or 3902. **Offered:** July. **Classes:** 2 lec & 1 tut & 1 computer lab/wk. **Assessment:** One 2hr exam, assignments, one 1 hr 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
Prerequisite: (STAT 2001 or 2901) and (MATH 2001 or 2901). **Prohibition:** May not be counted with STAT 3905. **Offered:** July. **Classes:** 2 lec & 1 tut/wk. **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
Prerequisite: STAT 2003 or 2903. **Offered:** July. **Classes:** 2 lec, 1 tut & 1 computer lab/wk. **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
Prerequisite: (MATH 2001 or 2901) and STAT 2903. **Prohibition:** May not be counted with STAT 3001. **Offered:** February. Classes: 2 lec & 2 tut /wk. **Assessment:** One 3hr exam, assignments.
Topics in STAT 3001 are treated at an Advanced level, with extensions.

STAT 3902 **Linear Models (Advanced)**
4 credit points
Prerequisite: STAT 2004 and (STAT 2903 or Credit in 2003) and (MATH 2002 or 2902). **Prohibition:** May not be counted with STAT 3002. **Offered:** February. **Classes:** 2 lec, 1 tut & 1 computer lab/wk. **Assessment:** One 3hr exam, assignments, one 1hr computer practical exam.

Topics in STAT 3002 are treated at an Advanced level, with extensions.

STAT 3905 **Markov Processes (Advanced)**
4 credit points
Prerequisite: STAT 2901 and MATH (2001 or 2901) and MATH (2002 or 2902). **Prohibition:** May not be counted with STAT 3005. **Offered:** July. **Classes:** 2 lec & 2 tut /wk. **Assessment:** One 3hr exam, assignments.

Topics in STAT 3005 are treated at an Advanced level, with extensions.

STAT 3907 **Multivariate Analysis (Advanced)**
4 credit points
Prerequisite: STAT 3902 and either 3001 or 3901. **Offered:** July. **Classes:** 2 lec, 1 tut & 1 computer lab/wk. **Assessment:** One 2hr exam, assignments.

This unit of study studies the analysis of data on several variables measured simultaneously.

(This unit of study is not available in 2000)

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. As part of the essay or project, students are required to prepare a talk about their essay or project.

Interested students should contact the fourth year coordinator at some convenient time before pre-enrolment. Senior level students contemplating an Honours year are strongly advised to consult the Senior unit of study handbooks for further advice and to discuss their choice of Senior units of study with the appropriate Senior level coordinator.

Further details of the Honours year are available from the coordinators for Applied Mathematics 4, Mathematical Statistics 4 and Pure Mathematics 4 and the respective unit of study handbooks.

Mechanical Engineering

The Department of Mechanical and Mechatronic Engineering is part of the Faculty of Engineering. In addition to providing professional training in mechanical and mechatronics engineering, the Department offers three one-semester units of study in the Faculty of Science.

The units of study are available as Intermediate units of study in a Science degree for students majoring in mathematics, physics, chemistry, geology, computer science or soil science, and who are thinking of an applied science career in mechanical or mechatronic engineering. Candidates for the BSc degree are not permitted to count more than 16 credit points of engineering units of study.

These units of study are intended to demonstrate the application of scientific principles in an engineering context so that the science student will gain an understanding of some engineering systems.
Double degree

Some Science graduates, who have passed the three units of study listed here may obtain a Bachelor of Engineering degree in Mechanical or Mechatronic Engineering after an additional two years' study. 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.

Registration

Registration

Timetable information on alternative lecture/tutorial/ laboratory/practical classes is available in the General Office of Mechanical Engineering.

Tutorials and laboratories

All students are required to undertake the tutorial and laboratory work associated with these 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.

MECH 2201   Thermodynamics 1

4 credit points

Prohibition: May not be counted with MECH 2200. **Offered:** February. **Classes:** 2 lec & 3hr lab or tut/wk. **Assessment:** One 2hr exam, assignments and lab work.

Consult Faculty of Engineering Handbook for unit description.

Textbooks

Cengel & Boles. Thermodynamics: an Engineering Approach. 3rd edn, McGraw-Hill

MECH 2202   Fluids 1

2 credit points

Prohibition: May not be counted with MECH 2200. **Offered:** February. **Classes:** 1 lec/wk & labs and tuts. **Assessment:** One 2hr exam, assignments and lab work.

Consult Faculty of Engineering Handbook for unit description.

Textbooks

Potter and Wiggert, Mechanics of Pluids, Prentive-Hall

MECH 2400   Mechanical Design 1

6 credit points

Prerequisite: 12 credit points each of Junior Mathematics and Junior Physics. **Offered:** July. **Classes:** 2 lec & two 2hr drawing office sessions/wk. **Assessment:** Assignments, quizzes.

Consult Faculty of Engineering Handbook for unit description.

Textbooks

Boudny. Engineering Drawing. McGraw-Hill

Shigley. Mechanical Engineering Design. McGraw-Hill

MECH 2500   Engineering Dynamics 1

4 credit points

Prerequisite: 12 credit points each of Junior Mathematics and Junior Physics. **Offered:** July. **Classes:** 2 lec/wk, three 3hr labs & ten 2hr tuts. **Assessment:** Exam and assignments.

Consult Faculty of Engineering Handbook for unit description.

Reference books

Smith & Smith. Mechanics. 2nd edn, Wiley, 1990

Mabie & Reinholtz. Mechanisms and Dynamics of Machinery. 4th edn, Wiley, 1987

Shigley & Vicker. Theory of Machines and Mechanisms. International edn, McGraw-Hill, 1981

Bedford & Fowler. Engineering Mechanics: Dynamics (Vol 2). SI edn, Addison Wesley

Department of Microbiology

The Department of Microbiology 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.

Registration

All BSc students (except Pharmacy students) must register with the Department (Level 5 Biochemistry/Microbiology Building) during the last week prior to the start of Semester. Students will then be allocated to practical classes. Failure to register during this time may preclude allocation to particular practical classes. Students with a unit of study in Microbiology in the July Semester must confirm their intention on the first day of the July Semester.

MICR 2001   Introductory Microbiology

8 credit points

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

Qualifying: BIOL 1002 or 1902 or 1003 or 1903. **Prerequisite:** CHEM 1102 or 1902 or 1904. **Corequisite:** BIOL 1001 or 1901 and CHEM 1101 or 1901 or 1903 and MATH (1001 or 1011 or 1901) and (1005 or 1015 or 1905). **Prohibition:** May not be counted with MICR 2003 or 2901. **Offered:** February. **Classes:** 3 lec, 1 tut & 4 prac/wk. **Assessment:** One 3hr exam, continuous assessment in prac, 2 assignments, prac exam.

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 micro-organisms (bacteria, algae, protozoa, fungi and the viruses), a detailed study of bacteria including structure, classification and identification, growth, death and control, and genetics.

An introduction to microbial ecology (soil, aquatic and agricultural microbiology, 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. 4th edn, WCB/McGraw-Hill, 1999

MICR 2002   Applied Microbiology

8 credit points

Mrs Dalins (Coordinator), Dr Carter, Prof. Reeves, Dr Humphery-Smith, Dr Duxbury

Prerequisite: MICR 2001 or 2901. **Prohibition:** May not be counted with MICR 2004 or 2902. **Offered:** July. **Classes:** 3 lec, 1 tut & 4 prac/wk. **Assessment:** One 3hr exam, continuous assessment in prac, 2 assignments, prac exam.

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 2001 or 2901.

The lectures cover two broad topics: molecular microbiology of the organism and microbial biotechnology and applications. The molecular microbiology covers microbial genetics, regulation and manipulation of the bacterial genome, the structure and functioning of procaryotic cells and aspects of microbial taxonomy and microbial evolution.

The microbial biotechnology section covers food microbiology (production, spoilage and preparation, as well as the safety of foods) and aspects of public health and medical microbiology (host parasite relationships, host defences, epidemiology of selected diseases, prevention of disease). Industrial microbiology deals with large scale production, traditional products, recombinant DNA products, biosensors and biocontrol agents, biodeterioration and bioremediation.

Practical classes enable the study of material which both complements and supplements the lecture topics. Excursions to industrial concerns are included.

Work experience

On completion of Microbiology 2002 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

As for MICR 2001

MICR 2003   Theoretical Microbiology A

4 credit points

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

Qualifying: BIOL 1002 or 1902 or 1003 or 1903. **Prerequisite:** CHEM 1102 or 1902 or 1904. **Corequisite:** BIOL 1001 or 1901 and

CHEM 1101 or 1901 or 1903 and MATH (1001 or 1011 or 1901) and (1005 or 1015 or 1905). **Prohibition:** May not be counted with MICR 2001 or 2901. **Offered:** February. **Classes:** 3 lec/wk. **Assessment:** One 3hr exam.

This unit of study is suitable for students who are majoring in other aspects of biology and wish to acquire a broad background knowledge in microbiology. Students attend the same lectures as those enrolled in Microbiology 2001. There is no practical or tutorial component.

Textbooks
As for MICR 2001

MICR 2004   Theoretical Microbiology B
4 credit points
Mrs Dalins (Coordinator), Dr Carter, Prof. Reeves, Dr Humphery-Smith, Dr Duxbury
Prerequisite: MICR 2001 or 2003 or 2901. **Prohibition:** May not be counted with MICR 2002 or 2902. **Offered:** July. **Classes:** 3 lec/wk. **Assessment:** One 3hr exam.

This unit of study is suitable for students who are majoring in other aspects of biology and wish to expand their knowledge of microbiology beyond that acquired in Microbiology 2001,2003 or 2901 with further theoretical considerations of the subject. Students attend the same lectures as those enrolled in Microbiology 2002. There is no practical or tutorial component.

Textbooks
As for MICR 2001

MICR 2901   Introductory Microbiology (Advanced)
8 credit points
Mrs Dalins (Coordinator), Prof. Reeves, Dr New, Dr Carter, Dr Duxbury
Qualifying: Credit or better in BIOL 1002 or 1902 or 1003 or 1903 and at least a pass in CHEM 1102 or 1902 or 1904. **Corequisite:** BIOL 1001 or 1901 and CHEM 1101 or 1901 or 1903 and MATH (1001 or 1011 or 1901) and (1005 or 1015 or 1905). **Prohibition:** May not be counted with MICR 2001 or 2003. **Offered:** February. **Classes:** 3 or 4 lec, 1 tut & 3 or 4 prac/wk. **Assessment:** As for MICR 2001, plus one 3hr exam.

This unit of study will be available to students who have performed well in the Biology and Chemistry Junior units of study. The unit of study is based on MICR 2001 with alternative components. The content and nature of these components may vary from year to year. Selection criteria for entry into the unit of study will be available from the coordinator at the time of enrolment.

Textbooks
As for MICR 2001

MICR 2902   Applied Microbiology (Advanced)
8 credit points
Mrs Dalins (Coordinator), Dr Carter, Prof. Reeves, Dr Humphery-Smith, Dr Duxbury, Dr Ferenci
Qualifying: Credit or better in MICR 2001 or in the equivalent components in MICR 2901. **Prohibition:** May not be counted with MICR 2002 or 2004. **Offered:** July. **Classes:** 3 or 4 lec, 1 tut & 3 or 4 prac/wk. **Assessment:** As for MICR 2002 plus one 3hr exam.

The unit of study is based on MICR 2002 with alternative components. The content and nature of these components may vary from year to year.

Textbooks
As for MICR 2001

MICR 3001   General and Medical Microbiology
12 credit points
Dr Duxbury (Coordinator), Dr New, Dr Carter, Dr Humphery-Smith, Dr Ferenci and others
Qualifying: MICR 2002 or 2902 or both MICR 2001 and 2004 or both MICR 2004 and 2901. **Prerequisite:** BCHM (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). **Prohibition:** May not be counted with MICR 3901. **Offered:** February. **Classes:** 3 lec, 6-7 prac & 2-3 other/wk. **Assessment:** One 2hr exam and one 1.5hr exam, essay, prac.

This unit of study extends some of the topics covered in Microbiology 2001 and 2002. General Microbiology includes microbial growth and metabolism, microbial ecology, and food microbiology. The lecture series on microbial growth and metabolism covers aspects of biomass formation, growth rate and nutrient uptake, chemostat cultures, growth yield, aerobic and anaerobic growth, and growth under stress. Microbial ecology introduces the principles which underlie the behaviour of microorganisms in all environments whether they be soil, water, food, medical or industrial. Food microbiology includes the causes and prevention of foodborne disease, microbiological analysis of foods, the indicator concept, hazard analysis and critical control points, modified atmosphere packaging, fungal spoilage of foods and mycotoxins. Medical Microbiology covers aspects of epidemiology, host defences, sexually transmitted diseases, and other important bacterial, viral, fungal, protozoal, helminth and zoonotic infections.

The practical component is designed to enhance students' practical skills and to complement the lecture series.

MICR 3002   Molecular and Environmental Microbiology
12 credit points
Dr Duxbury (Coordinator), Dr New, Dr Ferenci, Prof. Reeves, Dr Carter, Dr Humphery-Smith
Qualifying: MICR 2002 or 2902 or both MICR 2001 and 2004 or both MICR 2004 and 2901. **Prerequisite:** BCHM (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). **Prohibition:** May not be counted with MICR 3902. **Offered:** July. **Classes:** 3 lec, 6-7 prac & 2-3 other/wk. **Assessment:** One 2hr exam and one 1.5hr exam, prac.

This unit of study extends some of the topics covered in Microbiology 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 (Advanced)
12 credit points
Dr Duxbury (Coordinator), Dr New, Dr Carter, Dr Humphery-Smith, Dr Ferenci and others
Qualifying: MICR (2002 or 2902) or (MICR 2001 and 2004) or MICR (2004 and 2901). (Credit or better is required in MICR 2001 or 2002 or 2004 or the equivalent components of MICR 2901 or 2902.). **Prerequisite:** BCHM (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). **Prohibition:** May not be counted with MICR 3001. **Offered:** February. Classes: 4 lec, 6-7 prac & 1-2 other/wk. **Assessment:** Two 2hr exams and one 1.5hr exam, essay, prac.

This unit of study is based on Microbiology 3001. It is available to students who have performed well in Microbiology 2001 or 2901, and 2002, 2004 or 2902. The unit of study consists of a series of additional lectures related to the research interests in the Department. 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 and Environmental Microbiology (Advanced)
12 credit points
Dr Duxbury (Coordinator), Dr New, Dr Ferenci, Prof. Reeves, Dr Carter, Dr Humphery-Smith
Qualifying: MICR (2002 or 2902) or MICR (2001 and 2004) or MICR (2004 and 2901). (Credit or better is required in MICR 2001 or 2002 or 2004 or the equivalent components of MICR 2901 or 2902).

BSc

Units of study

Mechanical Engineering Microbiology

Prerequisite: BCHM (2001 or 2101 or 2901) or AGCH 2001 or BIOL (2005 or 2105 or 2905). Prohibition: May not be counted with MICR 3002. Offered: July. Classes: 4 lec, 6-7 prac & 1-2 other/wk. Assessment: Two 2hr exams and one 1.5hr exam, essay, prac. This unit of study is based on MICR 3002. It will be available to students who have performed well in MICR 2001 or 2901, and 2002, 2004 or 2902. The unit of study consists of a series of additional lectures related to the research interests in the Department. 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.

Microbiology Honours
Dr Ferenci

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 Departmental 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 by the end of the semester 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.

Department of Pharmacology

This Department offers a general liaining in pharmacology to students in the Faculty of Science studying for the BSc, BMedSc and BPharm degrees. It provides two Intermediate 4 credit point units of study, and four Senior 12 credit point units of study for BSc students.

PCOL 2001   Pharmacology Fundamentals
4 credit points
Dr Lloyd
Prerequisite: 6 credit points of Junior Chemistry (including CHEM 1101,1901 or 1903), 6 credit points of Junior Biology, and 6 credit points of units of study from other Science Discipline Areas. Offered: February. Classes: 2 lec/wk & 4 prac/computer sessions. Assessment: One 1.5hr exam, classwork.
NB: This is a qualifying unit of study for PCOL 3001 or 3002.
This unit of study introduces students to the basic concepts of pharmacology - how drugs act and how they reach their sites of action. The molecular sites of action of drugs are described and the relationships between drug activity and chemical structure explored. The roles of absorption, distribution, metabolism and elimination of drugs in determining the actions of drugs in the body are also considered.

This is a qualifying unit of study for Pharmacology 3001 or 3002.
Textbooks
Foster RW. Basic Pharmacology.4th edn, Butterworth Heinmann, 1996
OR
Rang HP et al. Pharmacology. 3rd edn, Churchill Livingstone, 1995
Study aids
Dale MM etal. Companion to Pharmacology. 2nd edn, Churchill Livingstone, 1996
Neal MJ. Medical Pharmacology at a Glance. 3rd edn, Blackwell Scientific Publications, 1997
Reference books
Hardman JG et al. Goodman and Gilman's The Pharmacological Basis of Therapeutics. 9th edn, Pergamon Press, 1990
Patrick GL. An Introduction to Medicinal Chemistry. Oxford Uni Press, 1995

PCOL 2002   Pharmacology - Drugs and People
4 credit points
Dr Robin Allan
Prerequisite: 6 credit points of Junior Chemistry (including CHEM 1101,1901 or 1903), 6 credit points of Junior Biology, and 6 credit points of units of study from other Science Discipline Areas. Students are strongly advised to complete PCOL 2001 before enrolling in PCOL 2002. **Offered:** July. **Classes:** 2 lec/wk & 4 prac/tut sessions. **Assessment:** One 1.5hr exam, classwork.
This unit of study explores how drugs produce their effects in the body and what these effects are. The effects of drugs on the autonomic nervous system and the types and actions of drugs used for the treatment of pain and inflammation are discussed. The social use of drugs and the effects of some commonly abused drugs are examined. There is also a brief introduction to the toxicology of natural poisons, in particular snake and spider venoms.
Textbooks
Rang H P et al. Pharmacology. 3rd edn, Churchill Livingstone, 1995
Study aids
Dale MM et al. Companion to Pharmacology. 2nd edn, Churchill Livingstone, 1995
Neal M J Medical Pharmacology at a Glance. 3rd edn, Blackwell Scientific Publications, 1997
Reference books
Hardman JG et al (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 9th edn, Pergamon Press, 1996
Dale MM et al. Companion to Pharmacology. 2nd edn, Churchill Livingstone, 1996

PCOL 3001 Molecular Pharmacology and Toxicology
12 credit points
Dr Ian Spence
Prerequisite: PCOL 2001 and 2002. Students are strongly advised to consider Intermediate units of study in Biochemistry and/or Chemistry together with PHSI 2001 and 2002 if they wish to undertake PCOL 3001. **Offered:** February. **Classes:** 4 lec, 2 tut & 6 prac/wk. Assessment: Two 3hr exams, classwork.
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 the topic with detailed examination of selected issues in toxicology. 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
Patrick GL. An Introduction to Medicinal Chemistry. Oxford Uni Press, 1995
Reference books
Hardman J G et al (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 9th edn, Pergamon Press, 1996
Klaasen C D. Casarett & Doull's Toxicology: The Basic Science of Poisons. Macmillan
Krogsgaard-Larsen P & Bundgard H (eds). A Textbook of Drug Design and Development. Harwood Academic Publishers, 1991

PCOL 3002   Neuro- and Cardiovascular Pharmacology
12 credit points
Professor Graham Johnston
Prerequisite: PCOL 2001 and 2002. Students are strongly advised to consider Intermediate units of study in Biochemistry and/or Chemistry together with PHSI 2001 and 2002 if they wish to undertake PCOL 3002. Offered: July. Classes: 4 lec, 2 tut & 6 prac/wk. Assessment: Two 3hr exams, classwork.
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 tliat 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, et al. Pharmacology. 3rd edn, Churchill Livingstone, 1995

Study aids
Einstein R. Pharmacology: Self-assessment Questions for Students. Butterworths, 1989
Neal M J. Medical Pharmacology at a Glance. 3rd edn, Blackwell Scientific Publications, 1997

Reference books
Cooper J R, et al. The Biochemical Basis of Neuropharmacology. Oxford, 1991
Hardman JG, et al (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 9th edn, Pergamon Press, 1996

PCOL 3901 Molecular Pharmacology and Toxicology (Advanced)

12 credit points
Dr Ian Spence
Prerequisite: PCOL 2001 and 2002. Students are strongly advised to consider Intermediate units of study in Biochemistry and/or Chemistry together with PHSI 2001 and 2002 if they wish to undertake PCOL 3801. **Prohibition:** May not be counted with PCOL 3001. **Offered:** February. **Classes:** 4 lec, 2 tut & 6 prac/wk. **Assessment:** Two 3hr exams, classwork.
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.

Reference books
Hardman JG et al (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 9th edn, Pergamon Press, 1997
Klaasen C D. Casarett & Doull's Toxicology: The Basic Science of Poisons. Macrniilan
Krogsgaard-Larsen P & Bundgard H (eds). A Textbook of Drug Design and Development. Harwood Academic Publishers, 1991

PCOL 3902 Neuro- and Cardiovascular Pharmacology (Advanced)

12 credit points
Professor Graham Johnston
Prerequisite: PCOL 2001 and 2002. Students are strongly advised to consider Intermediate units of study in Biochemistry and/or Chemistry together with PHSI 2001 and 2002 if they wish to undertake PCOL 3902. **Prohibition:** May not be counted with PCOL 3002. **Offered:** July. **Classes:** 4 lec, 2 tut & 6 prac/wk. **Assessment:** Two 3hr exams, classwork.
This unit will consist of the lecture and practical components of PCOL 3002. Students selected for PCOL 3902 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
Rang H P et al. Pharmacology. 3rd edn, Churchill Livingstone, 1995

Study aids
Einstein R Pharmacology: Self-assessment Questions for Students. Butterworths, 1989
Neal M J Medical Pharmacology at a Glance. 3rd edn, Blackwell Scientific Publications, 1997

Reference books
Cooper J R et al. The Biochemical Basis of Neuropharmacology. Oxford, 1991
Hardman J G et al (eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 9m edn, Pergamon Press, 1996

Pharmacology Honours

Assoc. Prof. R. Einstein

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.

School of 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 other 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 provides units of study at the Junior and Intermediate level for students wishing to complement other studies with Physics units of study which have an environmental emphasis, and for students wishing to major in Physics within the BSc (Environmental) award course program.
Location
Physics Junior units of study: lectures in Physics Building, laboratories in Carslaw Building.
Physics Intermediate, Senior and Honours units of study: Physics Building.
Noticeboards
On the balcony outside the Carslaw Physics laboratories and in the Physics Building as appropriate for each unit of study.
Registmtion
Junior units of study: In assigned laboratory periods during the first week of each semester.
Intermediate units of study: At first lecture, in the Physics Building. See noticeboard for allocation of lecture theatres.
Senior units of study: At first lecture, in the Physics Building. Consult noticeboard early in orientation period.
Advice on units of study
A member of the physics staff is normally present among Faculty advisers during enrolment week to advise intending commencing students. The Undergraduate Office, Room 202, Physics Building, will arrange for students to meet advisers for later year units of study.

Physics Junior units of study

Lecturer in charge Mrs FtM. Millar, Head of Junior Physics
There are seven different semester length units of study offered at the Junior level. Physics 1001 (Regular), Physics 1002 (Fundamentals) and Physics 1901 (Advanced) are offered in the February semester only and Physics 1004 (Environmental and Life Sciences), Physics 1902 (Advanced) and Physics 1500 (Astronomy) are offered in the July semester only. Physics 1003 (Technological) is offered in both February and July semesters. Completion of one unit of study in each semester provides a solid foundation for further studies in Physics in higher years. The February semester laboratory work provides an introduction to experimental techniques

BSc
Units of study
Microbiology
Pharmacology
Physics

while reinforcing concepts of physics introduced in lectures. In the July semester the laboratory work provides a further introduction to experimental physics and students are given the opportunity to undertake short projects.

Physics 1500 Astronomy cannot be counted towards the 12 credit points of Junior Physics needed as a prerequisite for Intermediate Physics.

Administrative Assistant

Junior Physics: Mrs E. Hing, Room 202, Physics Building.

Information booklet

Further information about Junior Physics units of study is contained in a booklet for intending commencing students available at enrolment or during Orientation or from the Junior year ackninistrative assistant.

PHYS 1001 Physics (Regular)
6 credit points
Corequisite: Recommended concurrent units of study: MATH 1001 and 1002 or 1901 and 1902. **Assumed knowledge:** HSC Physics or HSC 4-unit Science. **Prohibition:** May not be counted with PHYS 1002 or 1901. **Offered:** February. **Classes:** 3 lec & 3 prac/tut/wk. **Assessment:** One 3hr exam, lab & assignments.

This unit of study is for students who gained 65 marks or better in HSC 2-unit Physics or equivalent. The lecture series contains three four-week modules on the topics of Mechanics, Fluids and Fields, and Waves.

Textbooks

Halliday D, Resnick R, & Walker J. Fundamentals of Physics. 5th edn, John Wiley, 1996

Physics Laboratory Manuals - School of Physics Publication

PHYS 1002 Physics (Fundamentals)
6 credit points
Corequisite: Recommended concurrent unit of study: MATH 1001 and 1002 or 1901 and 1902. **Assumed knowledge:** No assumed knowledge of Physics. **Prohibition:** May not be counted with PHYS 1001 or 1901. **Offered:** February. **Classes:** 3 lec & 3 prac/tut/wk. **Assessment:** One 3hr exam, lab & assignments.

This unit of study is designed for students who have not studied Physics previously. The lecture series contains three four-week modules on the Language of Physics, Mechanics, and Waves.

Textbooks

Halliday D, Resnick R, & Walker J. Fundamentals of Physics. 5th edn, John Wiley, 1996

Physics Laboratory Manuals - School of Physics Publication

PHYS 1901 Physics (Advanced) A
6 credit points
Prerequisite: UAI at least that for acceptance into BSc (Advanced) program or at least 90 in HSC 2-unit Physics or a least 180 in HSC 4-unit Science or Distinction or better in PHYS 1003. **Corequisite:** Recommended concurrent unit of study: MATH 1001 and 1002 or 1901 and 1902. **Prohibition:** May not be counted with PHYS 1001 or 1002. **Offered:** February. **Classes:** 3 lec & 3 prac/tut/wk. **Assessment:** One 3hr exam, lab & assignments.

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 three four-week modules on the topics of Mechanics, Fluids and Fields, and Waves. The laboratory work also provides an introduction to computational physics using chaos theory as the topic of study.

Textbooks

Halliday D, Resnick R, & Walker J. Fundamentals of Physics. 5th edn, John Wiley, 1996

Physics Laboratory Manuals - School of Physics Publication

PHYS 1003 Physics (Technological)
6 credit points
Corequisite: Recommended concurrent unit of study: MATH 1003 and 1005 or 1903 and 1905. **Assumed knowledge:** HSC 2-unit Physics or HSC 4-unit Science or PHYS 1001 or 1002 or 1901 or equivalent. **Prohibition:** May not be counted with PHYS 1004 or 1902. **Offered:** February, July. **Classes:** 3 lec & 3 prac/tut/wk. **Assessment:** One 3hr exam, lab & assignments.

This unit of study is designed for students majoring in the physical and engineering sciences and emphasis is placed on applications of physical principles to the technological world. The lecture series contains three four-week modules on the topics of electromagnetism, thermal physics, and quantum and materials physics.

Textbooks

Halliday D, Resnick R, & Walker J. Fundamentals of Physics. 5th edn, John Wiley, 1996

Physics Laboratory Manuals - School of Physics Publication

PHYS 1004 Physics (Environmental and Life Sciences)
6 credit points
Corequisite: Recommended concurrent unit of study: MATH 1003 and 1005 or 1903 and 1905. **Assumed knowledge:** HSC 2-unit Physics or HSC 4-unit Science or PHYS 1001 or 1002 or 1901 or equivalent. **Prohibition:** May not be counted with PHYS 1003 or 1902. **Offered:** July. **Classes:** 3 lec & 3 prac/tut/wk. **Assessment:** One 3hr exam, lab & assignments.

This unit of study has been designed specifically for students interested in further study in environmental and life sciences. The lecture series contains three four-week modules on the topics of electromagnetism, properties of matter, and atoms, nuclei and quanta.

Textbooks

Halliday D, Resnick R, & Walker J. Fundamentals of Physics. 5th edn, John Wiley, 1996

Physics Laboratory Manuals - School of Physics Publication

PHYS 1500 **Astronomy**
6 credit points
Assumed knowledge: No assumed knowledge of Physics. **Offered:** July. **Classes:** 3 lec, 1 tut & 2 lab/wk. **Assessment: 1 hr** exam, 2 essays, prac, assignments.

This unit of study provides a broad understanding of the structure, scale and diversity of the universe and an appreciation of the scientific methods used to achieve this understanding. Current areas of investigation, new ideas and concepts which often receive wide media attention will be used to demonstrate how science attempts to understand new and remote phenomena and how our ideas of our place in the universe are changing. The range of topics includes the planets, the solar system and its origin, spacecraft discoveries, stars, supernovas, black holes, galaxies, quasars, cosmology and the Big Bang. It also includes day and night sky observing sessions.

This unit of study cannot be counted as part of the 12 credit points of Junior Physics necessary for enrolment in Intermediate Physics.

Textbooks

Seeds MA. Horizons: Exploring the Universe. 5th edn, Wadsworth Publishing Company: Belmont CA USA, 1998

PHYS 1902 Physics (Advanced) B
6 credit points
Prerequisite: UAI at least that for acceptance into BSc(Advanced) program, or at least 90 in HSC 2-unit Physics or at least 180 in HSC 4-unit Science or PHYS 1901 or Distinction or better in PHYS 1001. **Corequisite:** Recommended concurrent unit of study: MATH 1003 and 1005 or 1903 and 1905. **Prohibition:** May not be counted with PHYS 1003 or 1004. **Offered:** July. **Classes:** 3 lec/tut & 3 prac/wk. **Assessment:** One 3hr exam, lab & assignments.

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 three four-week modules on the topics of electromagnetism, thermal physics, quantum and materials physics, and superconductivity.

Textbooks

Halliday D, Resnick R, & Walker J. Fundamentals of Physics. 5th edn, John Wiley, 1996

Physics Laboratory Manuals - School of Physics Publication

Physics Intermediate units of study

Lecturer in charge: Dr J Ulrichs

The School of Physics offers four units of study in each semester at the Intermediate level. A full year intermediate program in Physics would normally be selected from one of the following combinations: PHYS 2001 and 2002, for students majoring in the physical and engineering sciences; PHYS 2101 and 2102 for students with a strong interest in the environmental or life sciences; PHYS 2901 and 2902, the advanced physics units of study for students who have achieved a Credit or better in PHYS 1003 or 1004. These three programs are qualifying units of study for Senior level physics. Two other units of study, PHYS 2103 and 2104, are shorter units of study for students in the environmental sciences who do not plan to continue with physics at a Senior level.

Full details of Intermediate Physics unit of study structures, contents and assessment policies are provided in the Intermediate Physics Information for students booklet available at the time of enrolment.

PHYS 2001   PhysiGS (Technological) A
8 credit points

Qualifying: 12 credit points of Junior Physics. **Prerequisite:** 12 credit points of Junior Mathematics other than MATH 1011,1012, 1013 and 1015 or Credit or better in MATH 1011,1012,1013 and 1015. This is a qualifying unit of study for Senior Physics.
Prohibition: May not be counted with PHYS 2101 or 2103 or 2901.
Offered: February. **Classes:** 3 lec, 3 prac & 2 microlab/wk.
Assessment: One 3hr exam, four computer based assignments, microlab (report & test), prac work and report.
This unit of study is designed for students majoring in the physical and engineering sciences. The lecture topics are quantum mechanics, with applications to solid state and particle physics, astronomy, and an intoduction to instrumentation for the physical and environmental sciences.

Microlab: Computational Physics is taught in ten two-hour sessions in a PC based computing laboratory. An introductory session is held at the beginning of the semester for students who are not familiar with personal computers. Students work in teams of three and using simple Pascal programming they develop computational solutions to problems in quantum mechanics. Computational physics is assessed by a short written report and a one-hour test administered individually.
Practical: Experimental physics is taught as a laboratory unit of study of three-hour sessions and includes experiments in the areas of instrumentation, quantum physics, properties of matter and environmental sensing and measurement. The unit of study is based on mastery of the material, with marks awarded on completion of each experiment. Assessment is also based on reviews of the students' logbooks and on a written report and oral presentation of it on a selected experiment.
Textbooks

Eisberg R, & Resnick R. Quantum Physics. 2nd edn, Wiley, 1985
Experimental Physics Notes. School of Physics Publication
Smith R. Observational Astrophysics. Cambridge 1995

PHYS 2002   Physics (Technological) B
8 credit points

Qualifying: 12 credit points of Junior Physics. **Prerequisite:** 12 credit points of Junior Mathematics other than MATH 1011,1012, 1013 and 1015 or Credit or better in MATH 1011,1012, 1013 and 1015. This is a qualifying unit of study for Senior Physics.
Prohibition: May not be counted with PHYS 2102 or 2104 or 2902.
Offered: July. **Classes:** 3 lec, 3 prac & 2 microlab/wk. **Assessment:** One 3hr exam, 2 prac reports, four computer based lab assignments, microlab (report & test), prac work and report.
This unit of study is designed for students majoring in the physical and engineering sciences. The lecture topics are electromagnetic properties of matter, instrumentation for the physical and environmental sciences, and optics for communications and sensing.

Microlab: The computational physics component is similar to that of PHYS 2001, except that the material for the unit of study will be drawn from optics topics.

Practical: As for Physics 2001, except that in the last part of the July semester students work in teams on a project, write a report on it and present the results in an oral report to other members of the class.
Textbooks
Experimental Physics Notes. School of Physics Publication

PHYS 2101   Physics (Environmental) A
8 credit points

Qualifying: 12 credit points of Junior Physics. **Prerequisite:** 12 credit points of Junior Mathematics other than MATH 1011,1012, 1013 and 1015 or Credit or better in MATH 1011,1012,1013 and 1015. This is a qualifying unit of study for Senior Physics.
Prohibition: May not be counted with PHYS 2001 or 2103 or 2901.
Offered: February. **Classes:** 3 lec, 3 prac & 2 microlab/wk.
Assessment: One 3hr exam, four computer based assignments, microlab (report & test), prac work and report.
This unit of study is designed principally for students majoring in the environmental or life sciences. The lecture topics are quantum physics, including an introduction to spectroscopy, astronomy, and an introduction to instrumentation for the physical and environmental sciences.

Microlab: As for PHYS 2001.
Practical: As for Physics 2001.
Textbooks
Eisberg R. & Resnick, R. Quantum Physics. 2nd ed, Wiley, 1985
Experimental Physics Notes. School of Physics Publication
Smith R. Observational Astrophysics. Cambridge, 1995

PHYS 2102   Physics (Environmental) B
8 credit points

Qualifying: 12 credit points of Junior Physics. **Prerequisite:** 12 credit points of Junior Mathematics other than MATH 1011,1012, 1013 and 1015 or Credit or better in MATH 1011,1012, 1013 and 1015. This is a qualifying unit of study for Senior Physics.
Prohibition: May not be counted with PHYS 2002 or 2104 or 2902.
Offered: July. **Classes:** 3 lec, 3 prac & 2 microlab/wk. **Assessment:** One 3hr exam, four computer based assignments, microlab (report & test), prac work and report.

This unit of study is designed principally for students majoring in the environmental or life sciences. The lecture topics are: energy transport in the environment, optics for communications and sensing, and instrumentation for the physical and environmental sciences.

Microlab: As for PHYS 2002.
Practical: As for Physics 2002.
Textbooks
Experimental Physics Notes. School of Physics Publication

PHYS 2103   Introduction to Environmental Physics
4 credit points

Qualifying: 12 credit points of Junior Physics. **Prerequisite:** 12 credit points of Junior Mathematics other than MATH 1011,1012, 1013 and 1015 or Credit or better in MATH 1011,1012,1013 and 1015. This is not a qualifying unit of study for Senior Physics.
Prohibition: May not be counted with PHYS 2001 or 2101 or 2901.
Offered: February. **Classes:** 3 lec/wk for part sem (27 total); 3 prac/wk for part sem (18 total). **Assessment:** One 2hr exam, two computer based assignments, prac work and report.
This unit of study is intended for students in the environmental sciences who do not plan to take Senior level units of study in Physics. Lectures are shared with PHYS 2101 except that astronomy is not offered.
Practical: As for Physics 2001 except that students work for half the semester only.

PHYS 2104   Applications of Environmental Physics
4 credit points

Qualifying: 12 credit points of Junior Physics. **Prerequisite:** 12 credit points of Junior Mathematics other than MATH 1011,1012, 1013 and 1015 or Credit or better in MATH 1011,1012,1013 and 1015. This is not a qualifying unit of study for Senior Physics.
Prohibition: May not be counted with PHYS 2002 or 2102 or 2902.
Offered: July. **Classes:** 3 lec/wk part sem (26 total); 3 prac/wk part sem (18 total). **Assessment:** One 2hr exam, three computer based assignments, prac work and report.
This unit of study is intended for students in the environmental sciences who do not plan to take Senior level units of study in

Physics. The lecture topics include instrumentation for the physical and environmental sciences, and energy transport in the environment.

Practical: As for Physics 2002 except that students work for half the semester only.

Textbooks

O'Experimental Physics Notes. School of Physics Publication

PHYS 2901   Physics (Advanced) A
8 credit points

Qualifying: PHYS 1901 and 1902 or 12 credit points of other Junior Physics units of study with an average of a Credit or better. Prerequisite: 12 credit points of Junior Mathematics other than MATH 1011,1012,1013 and 1015 or Credit or better in MATH 1011, 1012, 1013 and 1015. This is a qualifying unit of study for Senior Physics. Prohibition: May not be counted with PHYS 2001 or 2101 or 2103. Offered: February. Classes: 3 lec, 3 prac & 2 microlab/wk. Assessment: One 3hr exam, four computer based assignments, microlab (report & test), prac work and report.

The advanced Intermediate units of study are intended for students who have a strong interest in Physics. The advanced lecture subjects are generally more rigorous and cover material in greater depth than is done in the regular lecture series. The assessment of the advanced subjects will reflect the more challenging nature of the material presented. The lectures in PHYS 2901 include advanced quantum mechanics, astronomy, and an introduction to instrumentation for the physical and environmental sciences.

   Microlab: As for PHYS 2001.

Practical: As for Physics 2001.

Textbooks

Eisberg R, & Resnick R. Quantum Physics. 2nd edn, Wiley, 1985
Experimental Physics Notes. School of Physics Publication
Smith, R. Observational Astrophysics. Cambridge 1995

PHYS 2902   Physics (Advanced) B
8 credit points

Qualifying: PHYS 1901 and 1902 or 12 credit points of other Junior Physics units of study with an average of a Credit or better. Prerequisite: 12 credit points of Junior Mathematics other than MATH 1011,1012,1013 and 1015 or Credit or better in MATH 1011, 1012,1013 and 1015. This is a qualifying unit of study for Senior Physics. Prohibition: May not be counted with PHYS 2002 or 2102 or 2104. Offered: July. Classes: 3 lec, 3 prac & 2 microlab/wk. Assessment: One 3hr exam, four computer based assignments, microlab (report & test), prac work and report.

Refer to PHYS 2901 for an overall description of the advanced Intermediate program. The lectures in Physics 2902 include advanced electrodynamics, advanced optics, and instrumentation for the physical and environmental sciences.

   Microlab: As for PHYS 2002.

Practical: As for Physics 2002.

Textbooks

Griffiths DJ. Introduction to Electrodynamics. Prentice Hall, (2nd edn 1989, or 3rd edn 1999)
Experimental Physics Notes. School of Physics Publication

Physics Senior units of study

Lecturer in charge: Dr N Cramer

Physics provides a range of 4 credit point lecture-based units of study, and 4 and 8 credit point laboratory based units of study. Most units of study are offered at either the normal or the Advanced level. Entry into the Advanced units of study is restricted to students who have met various qualifying unit of study conditions. Students intending to specialise in Physics or to proceed to Physics Honours must take a minimum of 24 credit points of Physics units of study, which must include lecture units on Quantum Mechanics, Relativity, Thermal Physics, and at least one of the subjects: Condensed Matter Physics and Photonics, Astrophysics, Plasma Physics, Modern Optics, Nuclear and Particle Physics, and Acoustics and Ultrasonics. (Not all of these subjects will be available in any one year.) At least 8 credit points of the minimum 24 must be in experimental physics or special project units. (The special project is undertaken in a research group of the Physics School, and may be on an experimental or theoretical topic, subject to approval.) The remainder of the required number of

credit points may be made up by a choice of lecture units, computer based units or experimental units. It is possible to take up to 48 credit points in Senior Physics units of study.

   Students not specialising in Physics may take any of the above units of study. In addition, there are a number of 4 credit point units of study designed for such students which offer study of particular topics in Physics, and combine lectures and a small number of experiments on the topic. These are the units of study Physics: PHYS 3105 Astrophysics, PHYS 3106 Plasma Physics, PHYS 3107 Modern Optics, PHYS 3108 Nuclear and Particle Physics, PHYS 3109 Acoustics and Ultrasonics, and PHYS 3004 Condensed Matter Physics and Photonics is also suitable for such students.

   The detailed minimum requirements for students specialising in Physics or intending to proceed to Physics Honours are as follows. The corresponding Advanced units of study may be substituted for any of these units of study.

   (a) Physics 3003
   (b) Physics 3005
   (c) at least one of Physics 3004, 3006 and 3007
   (d) at least 8 credit points selected from any of: (i) either Physics 3008 or Physics 3009, (ii) either Physics 3101 or Physics 3102, or (iii) either Physics 3103 or Physics 3104
   (e) at least one other unit of study selected from the units of study in (c) and (d)

PHYS 3003   Quantum Mechanics and Relativity
4 credit points

Qualifying: 16 credit points of Intermediate Physics. Prerequisite: 8 credit points of Intermediate Mathematics. Prohibition: May not be counted with PHYS 3903 or 3200. Offered: February. Classes: 3 lec/wk. Assessment: 3hr exam, assignments.

The non-relativistic theory of quantum mechanics is treated, with particular emphasis on applications, such as in atomic and molecular physics. The theory of special relativity and its applications in classical mechanics and electromagnetism are also covered.

Textbooks

Eisberg R, & Resnick R. Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles. 2nd edn

Reference books

Griffiths DJ. Introduction to Electrodynamics. 2nd edn
Taylor EF, & Wheeler JA. Spacetime Physics. 2nd edn

PHYS 3004   Condensed Matter Physics and Photonics
4 credit points

Qualifying: 16 credit points of Intermediate Physics. **Prerequisite:** 8 credit points of Intermediate Mathematics. **Prohibition:** May not be counted with PHYS 3904. **Offered:** February. **Classes:** 3 lec/wk. **Assessment:** 3hr exam, assignments.

This unit of study covers two of the most important, and closely related, areas of research in contemporary physics and application to technology and engineering. The physics of condensed matter, in particular the solid state, is studied, as well as topics in photonic technology such as optical fibres.

Reference book

Kittel C. Introduction to Solid State Physics. 6th edn

PHYS 3005   Topics in Modern Physics A
4 credit points

Qualifying: 16 credit points of Intermediate Physics. **Prerequisite:** 8 credit points of Intermediate Mathematics. **Prohibition:** May not be counted with PHYS 3905. **Offered:** July. **Classes:** 3 lec/wk. **Assessment:** 3hr exam, assignments.

This unit of study covers thermal physics and energy physics, plus a choice of one subject covering an important research area of contemporary physics. Thermal physics covers the laws of thermodynamics, and energy physics explores the technological, environmental and practical uses and consequences of thermodynamics. The option subjects are in the areas covered by the research departments of the School of Physics: Astrophysics, Plasma Physics, Modern Optics, Nuclear and Particle Physics, and Acoustics and Ultrasonics. Not all of these option subjects may be offered in the one year.

Textbooks
Eisberg R, & Resnick R. Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles. 2nd edn (for Nuclear and Particle Physics)
Reference book
Zemansky and Dittman. Heat and Thermodynamics.
Chen. Introduction to Plasma Physics and Controlled Fusion. (Vol 1) (for Plasma Physics)

PHYS 3006   Topics in Modern Physics B
4 credit points
Qualifying: 16 credit points of Intermediate Physics. Prerequisite: 8 credit points of Intermediate Mathematics. Prohibition: May not be counted with PHYS 3906. Offered: July. Classes: 3 lec/wk. Assessment: 3hr exam, assignments.

This unit of study covers a choice of two subjects covering important research areas of contemporary physics: Astrophysics, Plasma Physics, Modern Optics, Nuclear and Particle Physics, and Acoustics and Ultrasonics. Not all of these option subjects may be offered in the one year. The option subjects cover the same topics as for Physics 3005.

PHYS 3007   Fourier Methods in Physics
4 credit points
Qualifying: 16 credit points of Intermediate Physics. Prerequisite: 8 credit points of Intermediate Mathematics. Prohibition: May not be counted with PHYS 3907. Offered: February. Classes: 3 lec/wk. Assessment: 1 hr exam, project, assignments.
This unit of study covers the concepts and applications of Fourier techniques in physics and other physical sciences and engineering, including the modelling of physical systems and the use of computers in experimental data analysis and signal processing. Topics included are: Fourier series, Fourier transforms and their applications, the fast Fourier transform, digital processing of signals, bandwidth and filtering, two-dimensional Fourier transforms and image analysis.

PHYS 3008   Experimental Physics A
4 credit points
Qualifying: 16 credit points of Intermediate Physics. Prerequisite: 8 credit points of Intermediate Mathematics. Prohibition: May not be counted with PHYS 3908 or 3009 or 3909. Offered: February. Classes: 4hr prac/wk. Assessment: Prac assessment.
Six experiments drawn from a range of experiments in the area of waves and optics, nuclear physics and tie properties of matter.

PHYS 3009   Experimental Physics B
8 credit points
Qualifying: 16 credit points of Intermediate Physics. Prerequisite: 8 credit points of Intermediate Mathematics. Prohibition: May not be counted with PHYS 3008 or 3908 or 3909. Offered: February. Classes: 8hr prac/wk. Assessment: Prac assessment.
Twelve experiments drawn from a range of experiments in the areas of waves and optics, nuclear physics and the properties of matter.

PHYS 3101   Experimental Physics C
4 credit points
Qualifying: 16 credit points of Intermediate Physics. Prerequisite: 8 credit points of Intermediate Mathematics. Prohibition: May not be counted with PHYS 3102 or 3801 or 3802. Offered: July. Classes: 4hr prac/wk. Assessment: Prac assessment.
Six experiments are undertaken, drawn from a range of experiments in the fields of waves and optics, nuclear physics and the properties of matter.

PHYS 3102   Experimental Physics D
8 credit points
Qualifying: 16 credit points of Intermediate Physics. Prerequisite: 8 credit points of Intermediate Mathematics. Prohibition: May not be counted with PHYS 3101 or 3801 or 3802. Offered: July. Classes: 8hr prac/wk. Assessment: Prac assessment.
Twelve experiments drawn from a range of experiments in the area of waves and optics, nuclear physics and the properties of matter.

PHYS 3103   Special Project A
4 credit points
Qualifying: 16 credit points of Intermediate Physics. Prerequisite: 8 credit points of Intermediate Mathematics. Prohibition: May not be counted with PHYS 3104 or 3803 or 3804. Offered: February. Classes: 4hr prac/wk. Assessment: Written report and oral presentation.
NB: Approval for this unit must be obtained from the Lecturer in charge of Senior Physics.
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. Approval for this unit must be obtained from the Lecturer in charge of Senior Physics.

PHYS 3104   Special Project B
4 credit points
Qualifying: 16 credit points of Intermediate Physics. Prerequisite: 8 credit points of Intermediate Mathematics. Prohibition: May not be counted with PHYS 3103 or 3803 or 3804. Offered: July. Classes: 4hr prac/wk. Assessment: Written report and oral presentation.
As for PHYS 3103, but in the July semester.

PHYS 3301   Scientific Computing
4 credit points
Prerequisite: 16 credit points of Intermediate units of study in Chemistry, Computer Science, Mathematics, Physics or Statistics. Offered: February. Classes: 2 lec & 2hr computer lab/wk.
Scientific computing now stands beside theory and experiment/ observation as a third way to pursue scientific investigations and technological developments. This course presents students with a wide variety of tools and techniques used in scientific computing. Abundant tutorials provide hands-on experience with a selection of the powerful computer facilities of Vislab. The unit of study deals with general principles and is suitable for students in any scientific or engineering discipline.

PHYS 3303   Scientific Visualisation
4 credit points
Prerequisite: PHYS 3301. Offered: July. Classes: 2 lec & 2hr computer lab/wk. Assessment: Examination, assignments and practical work.
This unit of study includes an introduction to visualisation, 2D image processing, visualisation of 2D data in 2 and 3 dimensions, dealing with different image formats, 3D scientific data volumes, visualisation techniques (volume, iso-surface, mesh), use/abuse of colour, volume visualisation, 3D geometric datasets, using a generic visualisation package (AVS), incorporating computational models within a visualisation, real-time visualisation, producing output, conceptual visualisation, experience with computer animation programs. As this unit of study deals with general principles it is suitable for students in any scientific discipline.

PHYS 3801   Experimental Physics C (Advanced)
4 credit points
Qualifying: PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. Prerequisite: 16 credit points of Intermediate Mathematics. Prohibition: May not be counted with PHYS 3101 or 3102 or 3802. Offered: July. Classes: 4hr prac/wk. Assessment: Prac assessment.
As for PHYS 3101 with extension material.

PHYS 3802   Experimental Physics D (Advanced)
8 credit points
Qualifying: PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. Prerequisite: 16 credit points of Intermediate Mathematics. Prohibition: May not be counted with PHYS 3101 or 3102 or 3801. Offered: July. Classes: 8hr prac/wk. Assessment: Prac assessment.
As for PHYS 3102 with extension material.

BSc

Units of study

Physics

PHYS 3803   Special Project A (Advanced)
4 credit points
Qualifying: PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 or Credit or better in PHYS 2002 or 2102. **Prerequisite:** 16 credit points of Intermediate Mathematics. **Prohibition:** May not be counted with PHYS 3103 or 3104 or 3804. **Offered:** February. **Classes:** 4hr prac/wk. **Assessment:** Written report and oral presentation.
NB: Approval for this unit must be obtained from the Lecturer in charge of Senior Physics.
As for PHYS 3103, but at a more challenging level. Approval for this unit must be obtained from the Lecturer in charge of Senior Physics.

PHYS 3804   Special Project B (Advanced)
4 credit points
Qualifying: PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. **Prerequisite:** 16 credit points of Intermediate Mathematics. **Prohibition:** May not be counted with PHYS 3103 or 3104 or 3803. **Offered:** July. **Assessment:** Written report and oral presentation.
As for PHYS 3104, but at a more challenging level.

PHYS 3903   Quantum Mechanics and Relativity (Advanced)
4 credit points
Qualifying: PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. **Prerequisite:** 16 credit points of Intermediate Mathematics. **Prohibition:** May not be counted withPHYS 3003 or 3200. **Offered:** February. Classes: 3 lec/wk. **Assessment:** 3hr exam, assignments.
This unit of study covers the same topics as PHYS 3003, with extension material. The formal foundations of Quantum Mechanics are emphasized.
Textbooks
Bransden BH, & Joachain CJ. Introduction to Quantum Mechanics.
Reference book
Griffiths DJ. Introduction to Electrodynamics. 2nd edn

PHYS 3904   Condensed Matter Physics and Photonics (Advanced)
4 credit points
Qualifying: PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. **Prerequisite:** 16 credit points of Intermediate Mathematics. **Prohibition:** May not be counted with PHYS 3004. **Offered:** February. **Classes:** 3 lec/wk. **Assessment:** 3hr exam, assignments.
This unit of study covers the same topics as PHYS 3004, with extension material.

PHYS 3905   Topics in Modern Physics A (Advanced)
4 credit points
Qualifying: PHYS 2901 and 2902 or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. **Prerequisite:** 16 credit points of Intermediate Mathematics. **Prohibition:** May not be counted with PHYS 3005. **Offered:** July. **Classes:** 3 lec/wk. **Assessment:** 3hr exam, assignments.
This unit of study covers the same topics as in PHYS 3005, except that Energy Physics may be replaced by Statistical Mechanics, which provides the molecular basis of thermodynamics. Extension material is also provided.
Textbooks
Eisberg R, & Resnick R. Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles. 2nd edn (for Nuclear and Particle Physics)
Reference book
Zemansky and Dittman. Heat and Thermodynamics.
Chen. Introduction to Plasma Physics and Controlled Fusion. (Vol 1) (for Plasma Physics)

PHYS 3906   Topics in Modern Physics B (Advanced)
4 credit points
Qualifying: PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. **Prerequisite:** 16 credit points of Intermediate Mathematics. **Prohibition:** May not be counted with PHYS 3006. **Offered:** July. **Classes:** 3 lec/wk. **Assessment:** 3hr exam, assignments.

This unit of study is as for the unit of study PHYS 3006, with extension material.

PHYS 3907   Fourier Methods in Physics (Advanced)
4 credit points
Qualifying: PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. **Prerequisite:** 16 credit points of Intermediate Mathematics. **Prohibition:** May not be counted with PHYS 3007. **Offered:** February. **Classes:** 3 lec/wk. **Assessment:** 1 hr exam, project, assignments.
This unit of study is as described for PHYS 3007 Fourier Methods in Physics, with extension material.

PHYS 3908   Experimental Physics A (Advanced)
4 credit points
Qualifying: PHYS 2901 and 2902, or Credit or better in PHYS 2001 or 2101 and Credit or better in PHYS 2002 or 2102. **Prerequisite:** 16 credit points of Intermediate Mathematics. **Prohibition:** May not be counted with PHYS 3008 or 3009 or 3909. **Offered:** February. **Classes:** 4hr prac/wk. **Assessment:** Prac assessment.
As for PHYS 3008 with extension material.

PHYS 3909   Experimental Physics B (Advanced)
8 credit points
Qualifying: PHYS 2901 and 2902, or Credit or better in PPHYS or 2101 and Credit or better in PHYS 2002 or 2102. **Prerequisite:** 16 credit points of Intermediate Mathematics. **Prohibition:** May not be counted with PHYS 3008 or 3009 or 3908. **Offered:** February. **Classes:** 8hr prac/wk. **Assessment:** Prac assessment.
As for PHYS 3009 with extension material.

PHYS 3105   Astrophysics
4 credit points
Qualifying: 16 credit points of Intermediate Physics. **Prerequisite:** 8 credit points of Intermediate Mathematics. **Offered: July. Classes:** 2 lec & 2hr prac/wk. **Assessment:** 2hr exam, assignments, prac assessment.
This unit of study is intended for students not majoring in physics. The lecture component is the same as for the astrophysics component of Physics 3005. Several experiments illustrating the principles of astrophysics are also undertaken in the physics laboratory.
   (May not be available every year - check with the Senior Physics coordinator)

PHYS 3106   Plasma Physics
4 credit points
Qualifying: 16 credit points of Intermediate Physics. **Prerequisite:** 8 credit points of Intermediate Mathematics. **Offered:** July. Classes: 2 lec & 2hr prac/wk. **Assessment:** 2hr exam, assignments, prac assessment.
This unit of study is intended for students not majoring in physics. The lecture component is the same as for the plasma physics component of PHYS 3005. Several experiments illustrating the principles of plasma physics are also undertaken in the physics laboratory.
   (May not be available every year - check with the Senior Physics coordinator)

PHYS 3107   Modern Optics
4 credit points
Qualifying: 16 credit points of Intermediate Physics. **Prerequisite:** 8 credit points of Intermediate Mathematics. **Offered:** July. **Classes:** 2 lec & 2hr prac/wk. **Assessment:** 2hr exam, assignments, prac assessment.
This unit of study is intended for students not majoring in physics. The lecture component is the same as for the modern optics component of PHYS 3005. Several experiments illustrating the principles of modern optics are also undertaken in the physics laboratory.
   (May not be available every year - check with the Senior Physics coordinator)

PHYS 3108   **Nuclear and Particle Physics**
4 credit points
Qualifying: 16 credit points of Intermediate Physics. **Prerequisite:** 8 credit points of Intermediate Mathematics. **Offered:** July. **Classes:** 2 lec & 2hr prac/wk. **Assessment:** 2hr exam, assignments, prac assessment.

This unit of study is intended for students not majoring in physics. The lecture component is the same as for the nuclear and particle physics component of PHYS 3005. Several experiments illustrating the principles of nuclear and particle physics are also undertaken in the physics laboratory.

(May not be available every year - check with the Senior Physics coordinator)

PHYS 3109   **Acoustics and Ultrasonics**
4 credit points
Qualifying: 16 credit points of Intermediate Physics. **Prerequisite:** 8 credit points of Intermediate Mathematics. **Offered:** July. **Classes:** 2 lec & 2hr prac/wk. **Assessment:** 2hr exam, assignments, prac assessment.

This unit of study is intended for students not majoring in physics. The lecture component is the same as for the acoustics and ultrasonics component of PHYS 3005. Several experiments illustrating the principles of acoustics and ultrasonics are also undertaken in the physics laboratory.

(May not be available every year - check with the Senior Physics coordinator)

PHYS 3200   **Quantum Physics**
4 credit points
Qualifying: 16 credit points of Intermediate Physics. **Prerequisite:** 8 credit points of Intermediate Mathematics. **Prohibition:** May not be counted with PHYS 3003 or 3903. **Offered:** February. **Classes:** 2 lec & 2hr prac/wk. **Assessment:** 2hr exam, assignments, prac assessment.

This unit of study is intended for students not majoring in physics. The lecture component is the same as for the quantum physics component of PHYS 3003. Several experiments illustrating the principles of quantum physics are also undertaken in the physics laboratory.

Physics Honours
Dr Robinson
Qualifying: 24 units of Senior Physics. **Classes:** 160 lec* & research project. **Assessment:** Three 3hr and five 2hr exams*, one 9000w report.
NB: Under review by the School of Physics.
Students of sufficient merit may be admitted to Honours in fourth year. They must devote their whole time to work in connection with Physics. Physics Honours comprises coursework (weight 50%) and a research project (weight 50%).

The series of lectures and prescribed reading cover quantum mechanics, statistical mechanics and kinetic theory, electromagnetic theory, condensed matter physics, plasma physics, modern optics, sub-atomic physics, astrophysics and relativistic quantum mechanics. Additional options, which may not be offered every year, include general relativity, materials physics, laser physics, cosmology, practice of physics, millimetre wave physics, signal and image processing, solar energy, fundamentals of physics, plasma astrophysics, space physics, and astrophysical shock theory.

Honours students are associated with one of the research groups in the School of Physics, and their research project is a part of the research activity of that group. Students are required to submit a formal report on their research work.

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 colloquiums and seminars. They may be employed for several hours per week in Junior teaching.

Department of Physiology

The Department of Physiology provides the following units of study for those wishing to study Physiology: introductory general Intermediate units of study and for those wishing to major in the subject, in-depth Senior units of study encompassing Neuroscience in the February and July semesters and Heart and Circulation in the July semester.
Registration
All students (including repeat students and non degree students) must complete a registration form (available in the Office) during the orientation period or earlier. Tutorial/practical class times will be included on personal timetables and more detailed information will be provided at the first class.

PHSI 2001   **Introductory Physiology A**
4 credit points
Dr M. Frommer, assisted by Ms I. Schneider
Prerequisite: 6 credit points of any March semester Junior Chemistry unit of study (eg: CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. **Prohibition:** May not be counted with PHSI 2101. **Offered:** February. **Classes:** 2 lec & 2 tut or prac/wk. **Assessment:** One 2hr theory exam, data tests, one essay, one oral presentation.
NB: Biology and Physics are strongly recommended prerequisites. PHSI 2001 is one of the recommended qualifying units for Senior Physiology units of study.
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 gastrointestinal physiology and haematology. The practical component involves simple experiements on humans or using computer simulations, with an emphasis on data analysis. Both oral and written communication skills are emphasized.
Textbooks
Rhoades R, & Pflanzer RR. Human Physiology. Saunders, 1996; or
Sherwood L. Human Physiology: From Cells to Systems, 3rd edn, 1997

PHSI 2002   **Introductory Physiology B**
4 credit points
Dr Frommer assisted by Ms I. Schneider
Prerequisite: 6 credit points of any March semester Junior Chemistry unit of study (eg: CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. **Prohibition:** May not be counted with PHSI 2102. **Offered:** July. **Classes:** 2 lec & 2 tut or prac/wk. **Assessment:** One 2hr theory exam, one data test, one essay, one oral presentation.
NB: PHSI 2002 is one of the recommended qualifying units for Senior Physiology units of study.
This unit of study gives a basic introduction to the functions of the remaining body systems: cardiovascular, repiratory, endocrine, reproductive and renal. The practical component involves simple experiments on humans or using computer simulations, with an emphasis on data analysis. Both oral and written communication skills are emphasized.
Textbooks
Rhoades R, & Pflanzer RR. Human Physiology. Saunders, 1996; or
Sherwood L. Human Physiology: From Cells to Systems, 3rd edn, 1997

PHSI 2101   **Physiology A**
8 credit points
Dr Frommer assisted by Ms I Schneider
Prerequisite: 6 credit points of any March semester Junior Chemistry unit of study (eg: CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. **Prohibition:** May not be counted with PHSI 2001. **Offered:** February. **Assessment:** One 3hr theory exam, one essay, one oral presentation, practical assessments.

BSc

Units of study

Physics
Physiology

NB: Biology and Physics are strongly recommended prerequisites, PHSI 2101 is one of the recommended Physiology qualifying units of study for PHSI 3001.

This unit of study incorporates PHSI 2001 but deals with the physiology topics covered there in more detail. These include nervous system function (nerve and muscle cells, sensory and motor systems, central processing), gastrointestinal physiology and haematology. It entails additional lectures, more complex practicals, and a component of problem-based group learning. Skills in hypothesis generation and testing, data analysis, and oral and written communication will be emphasized.

PHSI 2102   Physiology B

8 credit points
Dr Frommer assisted by Ms I Schneider
Prerequisite: 6 credit points of any March semester Junior Chemistry unit of study (eg: CHEM 1001 or 1101 or 1901) plus 30 credit points from Junior Chemistry, Biology, Physics, Psychology, Mathematics units of study. **Prohibition:** May not be counted with PHSI 2001. **Offered:** July. **Assessment:** One 3hr theory exam, one essay, one oral presentation, practical assessments.
NB: Biology and Physics are strongly recommended prerequisites. PHSI 2101 is one of the recommended Physiology qualifying units of study for PHSI 3001.

This unit of study incorporates PHSI 2002 but deals with the physiology topics covered there in more detail. These include the cardiovascular, respiratory, endocrine, reproductive and renal systems. It entails additional lectures, more complex practicals, and a component of problem-based group learning. Skills in hypothesis generation and testing, data analysis, and oral and written communication will be emphasized.

PHSI 3001   Neuroscience

12 credit points
Dr P. Martin, Dr J Mitrofanis
Qualifying: PHSI 2101 or PHSI 2001 or ANAT 2003 or BMED 2101 and 2102. **Prerequisite:** BCHM (2001 or 2101 or 2901) and (2002 or 2102 or 2901) plus 8 or more credit points from any Intermediate units of study in Anatomy and Histology, Biology, Chemistry, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology or Statistics. Students in the Faculty of Engineering who have completed Physiology 2001 and 2002 plus at least one other Intermediate unit of study similar to the prerequisites may also be permitted to enrol. **Offered:** February. **Classes:** 4 lec & 8 prac/wk. **Assessment:** One 3hr exam, spot tests, essays, prac reports, seminar presentations.

NB: A minimum of 8 credit points of Intermediate Physiology is recommended.

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.

Practical: The practical component of this unit of study consists of small group tutorials in neuroanatomy, experimental and computer based sessions on physiological memods, and small group sessions in which you will discuss current research papers related to the lecture topics. You will have the opportunity to examine human brain specimens during the tutorials, and in the Wilson Museum in the Department of Anatomy and Histology. Computer based facilities which allow you to learn the brain structures by simulated dissection are also available.

Textbooks

Kandel E, Schwartz J, & Jessell T. Principles of Neural Science (3rd ed), Elsevier

or

Bear M F, Connois, Paradiso MA. Neuroscience: Exploring the Brain. Baltimore: Williams and Williams, 1996
(Kendel et al is recommended for students who intend to study Neuroscience 3002 in the July semester)

PHSI 3901   Neuroscience (Advanced)

12 credit points
Dr P. Martin
Qualifying: PHSI 2101 or PHSI 2001 or ANAT 2003 or BMED 2101 and 2102. **Prerequisite:** BCHM (2001 or 2101 or 2901) and (2002 or 2102 or 2901) plus 8 or more credit points from any Intermediate units of study in Anatomy and Histology, Biology, Chemistry, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology or Statistics. **Offered:** February. **Classes:** 4 lec, 1 tut & 7 prac/wk. **Assessment:** One 3hr exam, spot tests, essays, prac reports, seminar presentations.
NB: A minimum of 8 credit points of Intermediate Physiology is recommended. Available to selected students only.

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 assignemtns during the practical sessions.

PHSI 3002   Neuroscience - Cellular and Integrative

12 credit points
Dr K Keay, Professor M Bennett
Prerequisite: BCHM (2001 and 2002) or (2101 and 2102) and an additional 8 or more credit points from any Intermediate unit/s of study in the following subjects: Anatomy and Histology, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology, or Statistics. Students in the Faculty of Engineering who have completed Physiology 2001 and 2002 plus at least one other Intermediate unit of study similar to the prerequisites may also be permitted to enrol. **Offered:** July. **Classes:** 3 lec, 3 tut & 6hr prac/wk. **Assessment:** One 3hr exam, spot tests, essays, prac reports, seminar presentations.

This unit of study will allow students to study in depm a range of topics in neuroscience at the molecular, cellular and integrative level. The topics covered are: the relationships between glia and neurones; the molecular basis of brain function; the integrated central neural control of autonomic and somatomotor functions; vision and higher cortical functions.

Practical: Practical work will take the form of either an experimental project carried out in a research laboratory or an extensive library research project.

Textbooks

Kandel E. Schwartz J. and Jessell T. Principles of Neural Science. (3rd ed), Elsevier

PHSI 3902   Neuroscience - Cellular and Integrative (Advanced)

12 credit points
Dr K Keay, Professor M Bennett
Prerequisite: PHSI 3001. **Offered:** July. **Classes:** 4 lec, 1 tut & 7hr prac/wk. **Assessment:** One 3hr exam, spot tests, essays, prac reports, seminar presentations.
NB: Available to selected students.

The lecture and practical component are the same as for PHSI 3002. Selected students will be set special advanced assignments and attend tutorials on mose assignemtns during the practical sessions.

PHSI 3003   Heart and Circulation

12 credit points
Dr J Hoh assisted by Ms I Schneider
Qualifying: PHSI 2102 or 2002 or BMED 2101 and 2102.
Prerequisite: BCHM (2001 or 2101 or 2901) and (2002 or 2102 or 2902) plus 8 or more credit points from any Intermediate units of study in Anatomy and Histology, Biology, Chemistry, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology or Statistics. Students in the Faculty of Engineering who have completed Physiology 2001 and 2002 plus at least one other Intermediate unit of study similar to the prerequisites may also be permitted to enrol. **Offered:** July. **Classes:** 4 lec, 2 tut & 6hr prac/wk. **Assessment:** One 3hr exam, essays, prac reports, seminar presentations.

NB: A minimum of 8 credit points of Intermediate Physiology is recommended.

This unit of study offers an up to date and in depm 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.

Practical: Lectures are combined with practical laboratory experiments on animals and human subjects.

PHSI3903   Heart and Circulation (Advanced)
12 credit points
Dr J Hoh assisted by Ms I Schneider
Qualifying: PHSI 2102 or 2002 or BMED 2101 and 2102.
Prerequisite: BCHM (2001 or 2101 or 2901) and (2002 or 2102 or 2902) plus 8 or more credit points from any Intermediate units of study in Anatomy and Histology, Biology, Chemistry, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology or Statistics. **Offered:** February. **Classes:** 4 lec, 1 tut & 7hr prac/wk. **Assessment:** One 3hr exam, essays, prac reports, seminar presentations.
NB: A minimum of 8 credit points of Intermediate Physiology is recommended. Available to selected students.
The lecture and practical component are the same as for PHSI 3003. Selected students will be set special advanced assignments and attend tutorials on those assignemtns during the practical sessions.

Physiology Honours
Assoc Prof D Davey
During fourth year, no formal series of lectures is provided but students are given a relevant problem to investigate. This problem usually represents a small facet of one of the major current research projects within the Department, and the students work in collaboration with members of the staff. Students write a thesis embodying the results of their work.

Department of Psychology
Psychology is the study of behaviour. As a study it is approached on a scientific basis, with provision for professional training at the postgraduate level. The research activities of the Department cover almost all of the main branches of the subject.

A normal three year sequence in Psychology is: PSYC 1001, 1002, 2111, 2112, 2113, 2114, and eight Senior units of study selected from PSYC 3201*, 3202*, 3203, 3204, 3205, 3206, 3207, 3208, 3209, 3210, 3211 and 3212 (*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 2111, 4 credit points
PSYC 2112, 4 credit points
PSYC 2113, 4 credit points
PSYC 2114, 4 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 3207, 4 credit points
PSYC 3208, 4 credit points
PSYC 3209, 4 credit points
PSYC 3210, 4 credit points
PSYC 3211, 4 credit points
PSYC 3212, 4 credit points

Students who have completed PSYC 3001 and/or 3002 must obtain the permission of the Head of Department of Psychology before enrolling in any of PSYC 3201 to 3212.
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 Griffith-Taylor Building.

Information about registration meetings for Intermediate and Senior Psychology students will also be posted at the Enrolment Centre, and on the Departmental noticeboards on the 5th floor of the Griffith-Taylor Building.
Enquiries
The main enquiry office of the Department 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 average of Pass with at least Credit average in Intermediate and in Senior Psychology units of study. These Psychology units include Psychology 2111, 2112, 2113, 2114, 3201, 3202, and at least six other Senior Psychology unit from Psychology 3203, 3204, 3205, 3206, 3207, 3208, 3209, 3210, 3211 and 3212. Students wishing to graduate with Honours in Psychology are urged to discuss their choice of ottier 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 its the contributions of exam and classwork for assessment purposes.
Textbooks
Check Departmental syllabi before buying prescribed texts.

PSYC 1001   Psychology 1001
6 credit points
Offered: February. **Classes:** 3 lec, one 2hr demonstration/tut/wk.
Assessment: One 3hr exam, one 1000w essay, one tut test, 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; sensory processes; social psychology; personality theory.
Textbooks
Psychology 1001 Handbook (1999) and others as advised.

PSYC 1002   Psychology 1002
6 credit points
Offered: July. **Classes:** 3 lec & 2hr demonstration/tut/wk.
Assessment: One 3hr exam, one 1250w prac report, one tut test, experimental participation.

Psychology 1002 covers the following areas: human development; human mental abilities; learning, motivation and abnormal psychology; visual perception; cognitive processes.
Textbooks
Psychology 1002 Handbook (1999) and others as advised.

PSYC 2111   Perception, Learning and Neuroscience
4 credit points
Qualifying: PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). **Offered:** February. **Classes:** 2 lec & 1 prac/wk. **Assessment:** Multiple choice exam, lab report.

This unit of study examines a range of phenomena and principles in perception and learning and their relations to neural substrates. The emphasis in perception is on the visual system and the relationship between structure and function, especially with respect to receptive fields and various visual effects. Also covered are depth, form, object and movement perception, the problem of perceptual stability and constancy and perceived orientation, including the relationship between the visual and vestibular systems. 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 series of practical classes and demonstrations allow students to gain hands-on experience of how some of these principles and phenomena may be studied experimentally.
Textbooks
See Departmental handout

PSYC2112   Psychological Statistics
4 credit points
Qualifying: PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). Offered: February. Classes: 2 lec & 1 prac/wk, 1 computer tut/fortnight. Assessment: Class tests, Group project, Multiple choice exam.
The aim of this unit of study is to introduce students to some of the fundamental concepts in statistics as used in Psychology. These include summary descriptive statistics and an introduction to the principles and practice of experimental design and inferential statistics. Building upon this ground work, the unit of study aims to develop 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 Departmental handout

PSYC 2113   Cognitive Processes and Social Psychology
4 credit points
Qualifying: PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). **Offered:** July. **Classes:** 2 lec & 1 prac/wk. **Assessment:** Class quiz and multiple choice exam.

The aim of the Cognitive Processes component is to acquaint students with current theoretical and experimental work in cognitive psychology. The aim of the Social Psychology component is to extend some of the Social Psychology topics introduced in Psychology 1001 and to introduce some new topics. Students are expected to gain an understanding of two main areas of Social Psychology: (1) Group and intergroup relationships and (2) Interpersonal processes, with a focus on altruism and helping behaviour and affiliation and attraction.
Textbooks
See Departmental handout

PSYC 2114   Personality and Individual Differences
4 credit points
Qualifying: PSYC 1001 and 1002 (Note: 16 credit points of Intermediate Psychology is required for Honours entry). **Offered:** July. **Classes:** 2 lec & 1 tut & 1 hr self-paced computer/library research/wk. **Assessment:** Personality: 1hr exam & essay; Individual Differences: 1 hr exam and quiz.

PSYC 2114 is made up of two components: Personality and Individual Differences. The aim of the Personality component is to introduce the student to various theories of personality, Eysenck's biological typology and current trait theory. Students will be exposed to conceptual analysis and encouraged to critically evaluate the various theories covered. The aim of the Individual Differences component is to introduce the major issues in individual differences and group differences in human abilities. It is divided into two parts: 5 lectures on individual differences and 8 lectures on group differences. Students are expected to gain an understanding about the major theories of intelligence

and of the facts related to the traditional areas of group differences.
Textbooks
See Departmental handout:

PSYC 3201   Statistics and Psychometrics
4 credit points
Qualifying: 12 credit points of Intermediate Psychology including PSYC 2112 (or PSYC 2001 and 2002). **Offered:** July. **Classes:** 2 lec & 1 prac & 1 hr unsupervised computer practice/wk. **Assessment:** Class test, assignment, examination.
NB: From year 2001 32 credit points of Senior Psychology is required for, Honours entry.
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 Departmental handout

PSYC 3202   History and Philosophy of Psychology
4 credit points
Qualifying: 12 credit points of Intermediate Psychology. Offered: February. Classes: 2 lec & 1 prac & 1 hr self paced library research/wk. Assessment: 1.5hr exam, 1 x 2500 word essay.
NB: From year 2001 32 credit points of Senior Psychology is required for Honours entry.
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, 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 Departmental handout

PSYC 3203   Abnormal Psychology
4 credit points
Qualifying: 12 credit points of Intermediate Psychology. Offered: July. Classes: 2 lec & 1 tut/wk. Assessment: 1.5hr exam, essay.
NB: From year 2001 32 credit points of Senior Psychology is required for Honours entry.
This unit of study examines core issues in Abnormal Psychology. The unit of study will cover aspects of adult abnormality and child abnormality and 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 (dysmymia, major depressive disorder, cyclomymia, bipolar disorder); Schizophrenia, Personality disorders.

(b) Child abnormal psychology: Learning disabilities, Mental retardation, Intellectual and educational assessment of children; Pervasive developmental disorders; Attention deficit disorder; Conduct disorder; Anxiety disorders in children and adolescents; Depression.

Textbooks
See Departmental handout

PSYC 3204   **Behavioural Neuroscience**
4 credit points
Qualifying: 12 credit points of Intermediate Psychology including
PSYC 2111 and 2112 (or PSYC 2001 and 2002). Offered: July.
Classes: 2 lec & 1 prac/wk. Assessment: 1.5hr exam, class quiz,
poster presentation, class participation.

*NB: From year 2001 32 credit points of Senior Psychology is
required for Honours entry.*
This unit of study carries on the from the Neuroscience compo-
nent of PSYCH 2111, providing some more specialised cover-
age in the areas of psychopharmacology, molecular neuro-
science, human brain imaging and cognitive neuroscience. Top-
ics 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); Molecular Neuroscience (effects of drugs on gene
expression, the use of knockout mice and antisense techniques);
Brain Imaging Technologies (findings in psychiatry and neurol-
ogy, what we can learn about the fundamentals of brain function
from brain imaging) and Cognitive Neuroscience (neural basis
of cognitive abnormalities in schizophrenia and other disorders).
In the first few weeks of the unit, tutorials consist of demonstra-
tions covering basic neuroanatomy, histology and neuropharma-
cology. In the latter part of the course, tutorials involve groups
of students giving poster presentations of recent "hot" papers in
the neuroscience field.
Textbooks
See Departmental Handout

PSYC 3205   **Cognition and Language**
4 credit points
Qualifying: 12 credit points of Intermediate Psychology including
PSYC 2112 and 2113 (or PSYC 2001 and 2002). Offered: July.
Classes: 2 lec & 1 tut/wk. Assessment: Class quiz, laboratory
report, multiple choice exam.

*NB: From year 2001 32 credit points of Senior Psychology is
required for Honours entry.*
Cognitive Processes and Language & Communication. Cogni-
tive Processes deals with current research in memory, attention
and pattern recognition and is approached in a practical way.
Students participate in experiments as subjects and experiment-
ers and are encouraged to think and act as experimenters in or-
der to prepare them for their empirical projects in fourth year
honours. In tutorial sessions students are set problems in the
derivation of hypotheses from theory and the design of experi-
ments to test these hypotheses. Language & Communication
focuses on face-to-face communication. Language is considered
in terms of its expressive content, and spoken language is dis-
cussed as part of a multi-channel communication system.
Textbooks
See Departmental Handout

PSYC 3206   **Developmental Psychology**
4 credit points
Qualifying: 12 credit points of Intermediate Psychology. Offered:
February. Classes: 2 lec & 1 tut/wk. Assessment: 1.5hr exam,
tutorial assessments.

*NB: From year 2001 32 credit points of Senior Psychology is
required for Honours entry.*
This unit of study examines various theoretical approaches to
and selected issues within Developmental Psychology. The ma-
jor issues/controversies in Developmental theory are examined
in relation to a number of the more influential theoretical ap-
proaches. Students are expected to gain an understanding of cur-
rent developmental theory and research. In addition the unit in-
troduces students to a range of issues in selected areas of con-
temporary 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 Departmental handout.

PSYC 3207   **Human Performance & Organisational Psychology**
4 credit points
Qualifying: 12 credit points of Intermediate Psychology including
PSYC 2113 (or PSYC 2001 and 2002). Offered: July. Classes: 2 lec
& 1 tut/wk. Assessment: 1.5hr exam, prac report.
*NB: From year 2001 32 credit points of Senior Psychology is
required for Honours entry.*
PSYC 3207 is comprised of two parts; Human Performance and
Organisational Psychology. The former is designed to provide a
basic understanding of the factors affecting variation in human
performance and ways of optimising performance and to pro-
vide a demonstration of the application of psychology to work
and sport. The unit of study focuses on some environmental, and
subjective factors which affect performance as well as introduc-
ing students to the relationship between chronobiology and per-
formance. The Organisational Psychology component focuses
on performance in the work place and the influence of social
factors on such performance.
Textbooks
See Departmental handout.

PSYC 3208   **Intelligence**
4 credit points
Qualifying: 12 credit points of Intermediate Psychology including
PSYC 2112 and 2114 (or PSYC 2001 and 2002). Offered: July.
Classes: 2 lec & 1 tut/wk. Assessment: 1.5hr exam, tutorial
quizzes.
*NB: From year 2001 32 credit points of Senior Psychology is
required for Honours entry.*
The aim is to provide an overview and critical platform to eval-
uate recent studies of individual differences in human cognitive
abilities. The unit introduces major contemporary issues in indi-
vidual differences in human abilities and intelligence. The em-
phasis of the latter part is on recent work on the topics related to
(a) Psychometric research on inteUigence; (b) Experimental cog-
nitive correlates approach to intelligence; (c) Biological aspects
of intelligence; and (d) the role of metacognitive abilities in in-
telligence. Some of the work carried out at this University is
also discussed.
Textbooks
See Departmental handout.

PSYC 3209   **Learning & Motivation**
4 credit points
Qualifying: 12 credit points of Intermediate Psychology including
PSYC 2111 and 2112 (or PSYC 2001 and 2002). Offered: February.
Classes: 2 lec & 1 tut/wk. Assessment: Report, exam.
*NB: From year 2001 32 credit points of Senior Psychology is
required for Honours entry.*
PSYC 3209 introduces the fundamental concepts and more im-
portant 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, health promotion and risk taking. It is de-
signed to develop skills in reading primary sources in this area;
and to provide the opportunity for hands-on experience of plan-
ning and carrying out a research project.
Textbooks
See Departmental handout.

PSYC 3210   **Perceptual Systems**
4 credit points
Qualifying: 12 credit points of Intermediate Psychology including
PSYC 2111 and 2112 (or PSYC 2001 and 2002). Offered: February.
Classes: 2 hrs lec & 1 hr lab/wk. Assessment: 1.5hr exam, quiz/
report.
*NB: From year 2001 32 credit points of Senior Psychology is
required for Honours entry.*
This unit covers at an advanced level selected topics in Percep-
tion from both the psychophysical and neuroscientific perspec-
tives. Students are expected to gain an understanding of the main
theoretical perspectives in current research, to appreciate the sig-

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Psychology

nificance 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.

PSYC 3211   Psychological Assessment
4 credit points
Qualifying: 12 credit points of Intermediate Psychology including PSYC 2112 and 2114(or PSYC 2001 and 2002). Offered: February. Classes: 2 lec & 1 tut/wk. Assessment: 1.5hr exam, tutorial evaluation.
NB: From year 2001 32 credit points of Senior Psychology is required for Honours entry.
This unit will cover fundamental issues in the construction, evaluation and administration of psychological tests with particular emphasis on tests of 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 unit of study 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 (TRT) and confirmatory factor analysis (CFA).
Textbooks
See Departmental handout

PSYC 3212   Social Psychology
4 credit points
Qualifying: 12 credit points of Intermediate Psychology including PSYC 2113 (or PSYC 2001 and 2002). Offered: February. Classes: 2 lec & 1 tut/wk. Assessment: 1.5hr exam, classwork quiz.
NB: From year 2001 32 credit points of Senior Psychology is required for Honours entry.
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 evolving 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, 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.

Psychology Honours
Prerequisite: Average of Credit or better in 16 credit points of Intermediate Psychology, and also in at least 32 credit points of Senior Psychology which must include PSYC 3201 and 3202. BPsych students should consult resolutions in Chapter 8. Department permission required. Assessment: Formal exams in Ethics and Issues in Psychology and Methods; report of empirical research project; theoretical thesis or take-home examination in three Special Fields modules.

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 Psychology.

Students are required to:

(a) devise, conduct and report upon an empirical research project,

(b) write a theoretical thesis or attend three Special Fields seminars and write three essays;

(c) attend one lecture series in Ethics and Issues in Psychology and two Method lecture series. The areas of psychology in which the empirical research project may be carried out will depend on the interests and specialities of staff members.

Bachelor of Science (Advanced) degree program

Summary of requirements

The Bachelor of Science (Advanced) degree program requires three years of full-time study. An Honours program is available and requires a further year of full-time study. Progression towards the Bachelor of Science (Advanced) degree program is by accumulation of credit points gained by completing units of study.

A total of 144 credit points is required for the degree. These must include:
- 48 credit points from Senior units of study
- 48 credit points from Intermediate units of study

Students will also be required to perform at a standard that will allow them to be admitted into an Honours year.

Units of study taken must include 12 credit points of Mathematics.

All students in the Bachelor of Science (Advanced) must complete at least 24 credit points of Junior Advanced units of study (or qualify for admission to 16 credit points of Intermediate Advanced units of study), at least 16 credit points of Intermediate Advanced units of study and at least 24 credit points of Senior Advanced units of study. Units of study taken under the Faculty's Talented Student Program may be substituted for Advanced units.

The Resolutions of the Senate governing candidature for the degree of Bachelor of Science listed in this chapter also govern the BSc (Advanced) degree program. Students should refer to the Table of units of study for the BSc (Table I).

UAI

A quota exists for admission into the degree of Bachelor of Science (Advanced).

Transferring into the BSc (Advanced) degree program

Students may be permitted to transfer from other degrees offered by the Faculty of Science into the BSc (Advanced). In order to transfer into the BSc (Advanced) students must achieve a WAM of at least 75. They must also meet Departmental unit of study entrance requirements.

Progression requirements

A minimum requirement for progression in the BSc (Advanced) will be set annually and will be based on WAM and performance in Advanced subjects. Students in Advanced Degree programs are expected to obtain a credit average in each year of study.

BSc degree resolutions
See Chapter 7.

Bachelor of Science (Advanced Mathematics) degree program

Summary of requirements

The Bachelor of Science (Advanced Mathematics) degree program requires three years of full-time study. An Honours program is available and requires a further year of full-time study. Progression towards the Bachelor of Science (Advanced Mathematics) degree program is by accumulation of credit points gained by completing units of study. A total of 144 credit points is required for the degree.

The Resolutions of the Senate governing candidature for the degree of Bachelor of Science also govern the Bachelor of Science (Advanced Mathematics) degree program. Students should refer to Table I for complete details, including prerequisite, corequisite and excluded units of study. In addition, the following conditions apply:

A. Junior units of study

Candidates are required to enrol in and complete at least 24 credit points of Junior units of study at the Advanced level of which at least 12 must be chosen from the Science Subject Areas of Mathematics and Statistics.

B. Intermediate units of study

Candidates are required to enrol in and complete at least 16 credit points of Intermediate units of study at the Advanced level chosen from the Science Subject Areas of Mathematics and Statistics.

C. Senior units of study

Candidates are required to enrol in and complete at least 24 credit points of Senior units of study at the Advanced level chosen from the Science Subject Areas of Mathematics and Statistics.

UAI

A quota exists for the admission into the degree of Bachelor of Science (Advanced Mathematics).

Transferring into the BSc (Advanced Mathematics) degree program.

Students may be permitted to transfer from other degrees offered by the Faculty of Science into the Bachelor of Science (Advanced Mathematics). To transfer into the Bachelor of Science (Advanced Mathematics) students must achieve a WAM of at least 75 and must meet Departmental unit of study entrance requirements.

Progression requirements

A minimum requirement for progression in the BSc (Advanced) will be set annually and will be based on WAM and performance in Advanced subjects. Students in Advanced Degree programs are expected to obtain a credit average in each year of study.

BSc degree resolutions
See Chapter 7.

Bachelor of Science (Bioinformatics) degree program

The Bachelor of Science (Bioinformatics) degree program requires three years of full-time study (or equivalent). An Honours program is available and requires a further year of full-time study. Progression is by accumulating credit points gained by completing units of study. A total of 144 credit points is required. These must include 12 credit points at Junior level in each of Biology, Chemistry, Computer Science and Mathematics; at least 16 credit points at Intermediate level in Biology, Biochemistry and/or Pharmacology; at least 8 credit points from the following Intermediate units of study: BCHM 2001 or 2901 or BIOL 2005 or 2905); 12 credit points at Intermediate level in Computer Science; 24 credit points at Senior level in Biology, Biochemistry and/or Pharmacology and 24 credit points at Senior level in Computer Science (including COMP 3206).

The Resolutions of the Senate governing candidature for the degree of Bachelor of Science listed in this chapter also govern the BSc (Bioinformatics) degree program. Students should also refer to the Table of units of study for the BSc (Table I).

UAI

A quota exists for admission into the degree of Bachelor of Science (Bioinformatics).

Transferring into the BSc(Bioinformatics) degree program

Students may be permitted to transfer from other degrees offered by the Faculty into the BSc(Bioinformatics) degree program.

Selection is on academic merit and subject to a quota determined by the Dean.

BSc Degree Resolutions

See Chapter 7.

Table IA: Bachelor of Science (Bioinformatics)

(a) (b)	(o) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f)
Unit of Study			Offered

Junior Units of Study

Candidates are required to enrol in and complete:
(i) at least 12 credit points from Junior units of study in the Science Subject Area of Mathematics; and
(ii) at least 12 credit points from Junior units of study in each of the Science Subject Area of Biology, Chemistry and Computer Science.

Intermediate Units of Study

Candidates are required to enrol in and complete:
(i) at least 12 credit points from Intermediate units of study in the Science Subject Area of Computer Science; and
(ii) at least 16 credit points from Intermediate units of study in the Science Subject Areas of Biochemistry, Biology or Pharmacology; and
(iii) at least 8 credit points from the following Intermediate units of study: BCHM 2001, BCHM 2901, BIOL 2005, BIOL 2905.

Senior Units of Study

Candidates are required to enrol in and complete:
(i) At least 24 credit points from Senior units of study in the Science Subject Area of Computer Science (including the units of study COMP 3206); and
(ii) 24 credit points at Senior level in Biology, Biochemistry and/or Pharmacology

| **COMP** Bioinformatics Project 3206 | 4 | Q) COMP 2004 or 2904. P) 8 credit points of Senior Computer Science (including COMP 3008/3100/3908/3800) and 16 credit points of Intermediate Biology, Biochemistry and/or Pharmacology. | *July* |

Bachelor of Science (Environmental) degree program

Summary of requirements

The Bachelor of Science (Environmental) degree program requires three years of full-time study. An Honours program is available and requires a further year of full-time study. To qualify for this degree, students must complete units of study to the value of 144 credit points, which must include:

- Junior units of study to the value of 12 credit points from each of the Science Subject Areas of Biology, Chemistry and Mathematics (the study of Biology, Chemistry or Mathematics units of study at the Advanced level is highly recommended)
- the specialist Environmental Science units of study ENVI 1001, ENVI 1002, ENVI 2001, ENVI 2002, ENVI 3001 and ENVI 3002,
- at least 32 credit points from Intermediate or Senior units of study in the Science Subject Areas of Agricultural Chemistry, Biology, Chemistry, Geography, Geology and Geophysics, Marine Science, Microbiology and Soil Science,

(Special arrangements may be made with the Dean of Science to enrol in a Physics major within this degree program.)

A typical program of study is:

First Year

12 credit points of Junior Biology.

12 credit points of Junior Chemistry.

12 credit points of Junior Mathematics

ENVI 1001 and ENVI 1002.

Second Year

32 credit points chosen from Intermediate Science units of study.

ENVI 2001 and ENVI 2002.

Third Year

At least 24 credit points chosen from Senior Science units of study.

ENVI 3001 and ENVI 3002.

The Resolutions of the Senate governing candidature for the degree of Bachelor of Science listed in Chapter 7 also govern the BSc (Environmental) degree program. Table IB is the Table of units of study for the Bachelor of Science (Environmental) degree program; students should also refer to the Table of units of study for the BSc (Table I).

UAI

A quota exists for admission into the degree of Bachelor of Science (Environmental).

Transferring into the BSc (Environmental)

Students may be permitted to transfer from other degrees offered by the Faculty of Science into the BSc (Environmental) degree program with the permission of the Dean.

BSc degree resolutions

See Chapter 7.

Table IB: Bachelor of Science (Environmental)

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered

A: Junior Units of Study

Candidates are required to enrol in and complete:
(i) ENVI 1001 and ENVI 1002; and
(ii) 12 credit points of Junior units of study from the Science Subject Area of Biology; and
(iii) Chemistry (1101 or 1901 or 1903) and Chemistry (1102 or 1902 or 1904); and
(iv) 12 credit points of Junior units of study from the Science Subject Area of Mathematics.

ENVI 1001	Global Geology	6		*February*
ENVI 1002	Geomorphic Environments and Change	6		*July*

B. Intermediate Units of Study

Candidates are required to enrol in and complete:
(i) ENVI 2001 and ENVI 2002; and
(ii) 32 credit points of Junior or Intermediate units of study including at least 16 credit points of Intermediate units of study from the Science Subject Areas of Agricultural Chemistry, Biology, Chemistry, Geography, Geology and Geophysics, Marine Science, Microbiology, Physics, and Soil Science. Units of study in History and Philosophy of Science may be taken on approval of the Chair of the Program Committee for Environmental Science.

ENVI 2001	Biological Environmental Processes	8	P) ENVI 1001 and ENVI 1002. *NB: This unit of study can only be taken by students enrolled in the BSc(Environmental).*	*February*
ENVI 2002	Physical Environmental Processes	8	P) ENVI 1001 and ENVI 1002. *NB: This unit of study can only be taken by students enrolled in the BSc(Environmental).*	*Jidy*

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, 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 3001	Environmental Law and Planning	12	P) ENVI 2003, 2004, 2103 and 2104 (From year 2001: ENVI 2001 and 2002). *NB: This unit of study can only be taken by students enrolled in the BSc(Environmental).*	*February*
ENVI 3002	Environmental Assessment	12	P) ENVI 2003, 2004, 2103 and 2104 (From year 2001: ENVI 2001 and 2002). *NB: This unit of study can only be taken by students enrolled in the BSc(Environmental).*	*July*
AGCH 3012	Rural Environmental Chemistry	4	P) ENVI 2003, 2004, 2103 and 2104 (From year 2001: ENVI 2001 and 2002). C) ENVI 3001. *NB: This unit of study is offered only to students enrolled in the BSc(Environmental). A maximum quota of 25 may exist. Contact the Environmental Science advisor.*	*February*
CHEM 3601	Chemistry 3A (Environmental)	4	P) CHEM 1102 or 1902 and ENVI 2103 and 2104 (From year 2001: CHEM 1102 or 1902 and ENVI 2002). N) May not be counted with CHEM 3101 or 3201 or 3901 or 3102 or 3202, or 3902 or 3903	*February*
CHEM 3602	Chemistry 3B (Environmental)	4	P) CHEM 1102 or 1902 and ENVI 2103 and 2104 (From year 2001: CHEM 1102 or 1902 and ENVI 2002). N) May not be counted with CHEM 3101 or 3201 or 3901 or 3102 or 3202 or 3902 or 3903	*July*
PHYS 3600	Energy and the Environment	4	P) ENVI 2104 or 12 credit points of Junior Physics (From year 2001: 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.*	*February*

Bachelor of Science (Environmental)
Bachelor of Science (Environmental) Junior units of study

ENVI 1001   Global Geology
6 credit points
Professor Davies
Offered: February. **Classes:** 3 lec & prac/tut/wk. **Assessment:** One 3hr exam, class work.

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

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

ENVI 1002   Geomorphic Environments and Change
6 credit points
Assoc. Prof. D. Dragovich
Offered: July. **Classes:** 3 lec & prac/tut/wk. **Assessment:** One 3hr exam, class work.

This unit of study completes the introduction to environmental earth sciences by examining geographical scales of environmental concern, such as catchments, river basins, hydrology and land-use. The unit of study also considers the soil environment including physical, chemical and biological aspects. Students will learn how to integrate information from related disciplines to understand relationships between earth sciences and solutions to environmental problems.

Bachelor of Science (Environmental) Intermediate units of study
You must enrol in both Environmental Science Intermediate units of study (ENVI 2001 and ENVI 2002).

ENVI 2001   Biological Environmental Processes
8 credit points
Prerequisite: ENV11001 and ENV11002. **Offered:** February. **Classes:** 3 lec, 1 prac & 2 tut/wk, field excursions. **Assessment:** one 3hr exam, prac assignments.
NB: This unit of study can only be taken by students enrolled in the BSc(Environmental).

ENVI 2002   Physical Environmental Processes
8 credit points
Prerequisite: ENV11001 and ENV11002. **Offered:** July. **Classes:** 3 lec, 2 tut & 1 prac/wk, field excursions. **Assessment:** One 3hr exam, prac assignments.
NB: This unit of study can only be taken by students enrolled in the BSc(Environmental).
Environmental Science 2 provides the integrated framework for understanding the natural environment in terms of its chemical, physical, biological, ecological and earth-scientific components. This is used to identify and understand the impact of humans on our environments at scales from local rivers to global patterns of climate. ENVI 2001 concentrates on the biological, microbiological and earth science aspects of natural processes within the environment as well as how these are impacted upon by human activities. ENVI 2002 considers the physical and chemical aspects, from climate and hydrology through to geomorphology to pollution. Emphasis is on practical measurement and interpretation to provide professional training in the use of numerous relevant disciplines.

Bachelor of Science (Environmental) Senior units of study
You must enrol in 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.

Listed below are two separate descriptions for Senior units of study for students enrolling in the Senior year of the BSc(Environmental) in the year 2000, and for students enrolling in the Senior year of the BSc(Environmental) from the year 2001.

ENVI 3001   Environmental Law and Planning
12 credit points
Prerequisite: ENVI 2003, 2004, 2103 and 2104 (From year 2001: ENVI 2001 and 2002). **Offered:** February. **Classes:** (8 lec or tut)wk; 70hr of prac and field-units of study. **Assessment:** Continual assessment throughout the semester by essay, report and prac assignments.
NB: This unit of study can only be taken by students enrolled in the BSc(Environmental).
For students commencing Senior year in 2000 only
Environmental Science 3001 Core Module, 4 credit points
Classes: (4 lec or tut)/wk; 28hr of prac and field-units of study. Assessment: one 1.5hr exam and 2 prac assignments each semester; one major environmental report.

The Core section in Senior Environmental Science build 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. Topics in the 3A Core module include introductions to environmental ethics, law, and issues of planning, regulation and management for the built and natural environments.
Environmental Science 3001 Option Modules
The following list of Options modules are available for inclusion within the ENVI 3001. The modules are of varying durations and credit weightings, as detailed below. This list is subject to change according to the availability of resources from within the contributing Departments. No student may take Option modules so as to gain more than 12 credit points in any one relevant discipline per year, so careful consideration must be given towards both ENVI 3001 and 3002 subjects at the beginning of First Semester. Please see the Chair of the Program Committee for Environmental Science for an up-to-date listing.
Biology
- Ecophysiology (4 credit points) {Taken as part of School of Biology Honours program}
  Ecophysiology is a field course, held over 3 days, that covers general physiological interactions between organisms and their environment.
Chemistiy
- Chemistry 3A (Environmental) (CHEM 3601,4 credit points)
  Consists of 2 hours of lectures and 2 hours of practical each week, covering the subjects Spectroscopic Identification of Organic Compounds, Instrumental Methods in Analytical Chemistry, Aquatic Chemistry and Radiation Chemistry. Assessment is by exam and practical.
Physics
- Energy and the Environment (PHYS 3600, 4 credit points)
Geography
- Ancient Environments (6 credit points) {Taken as part of GEOG3101}
- Environmental Fluvial Geomorphology (6 credit points) {Taken as part of GEOG 3101}
Agricultural Chemistry & Soil Science
- Environmental Soil Physics (6-credit points). {Taken as part of SOIL 3001}
- Pedology (6-credit points). {Taken as part of SOIL 3001}
- Introductory Environmental Plant & Soil Chemistry (AGCH 3012, 4-credit points)

BSc(Environmental)

Table
Units of study

Geology and Geophysics
- Physical Sedimentology (MARS 3001/MS3, 6 credit points)
- Geodynamics (GEOP 3002, 4 credit points)

Microbiology
- Microbiology (2 x 4 credit points - one each semester) {Taken as part of MICR 2001 and 3002}

These 2 modules must be taken togemer. They cannot be taken individually.

The 1st Semester module covers: an introduction to microbiology; basic techniques (microscopy, staining, cultivation of bacteria); sterilization and disinfection; prokaryotes; eukaryotes; and, microbial growth, with 3 hours of lectures, 1 of tutorials and 4 of practical each week for the first 7 weeks of semester.

In second semester, the module consists of 1 lecture and 3 hours of practical each week for the whole semester, covering environmental aspects of plant, soil and water microbiology.

Students commencing Senior year from 2001

ENVI 3001 covers topics and issues in environmental ethics, law, planning, regulation and management for the built and natural environments, and energy production and alternate processes. There is also a field school to outback New South Wales, travelling to areas such as the Namoi Valley and the Macquarie Marshes which is held in the week prior to the start of semester, and is designed to investigate the impact of irrigation-based agricultural practices on the environment. An alternative is available to those students unable to attend this 7-day excursion.

ENVI 3002   Environmental Assessment
12 credit points
Prerequisite: ENVI 2003, 2004, 2103 and 2104 (From year 2001: ENVI 2001 and 2002). **Offered:** July. **Classes:** (8 lec orturjwk; 70hr of prac and field-units of study. **Assessment:** Continual assessment throughout the semester by essay, report and prac assignments.
NB: This unit of study can only be taken by students enrolled in the BSc(Environmental).

For students commencing Senior year in 2000 only

Environmental Science 3002 Core Module, 4 credit points
Classes: (4 lec or tut)/wk; 28hr of prac and field-units of study
   Assessment: one 1.5hr exam and 2 prac assignments each semester; one major environmental report

The Core section in Senior Environmental Science build 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. Topics in the 3B Core module include introductions to environmental economics, and issues concerning environmental impact assessment. Emphasis will be on practical work in field-units of study to learn how to interpret and synthesise environmental data, to make decisions and recommendations about possible environmental management and how to use diverse sources of specialist information for large scale problem-solving.

Environmental Science 3002 Option Modules
The following list of Options modules are available for inclusion within the ENVI 3002. This list is subject to change according to the availability of resources from within the contributing Departments. No student may take Option modules so as to gain more than 12 credit points in any one relevant discipline per year, so careful consideration must be given towards both ENVI 3001 and 3002 subjects at the beginning of First Semester. Please see the Chair of the Program Committee for Environmental Science for an up-to-date listing.

Biology
- Ecology (8 credit points) (Taken as part of BIOL 3202)

Divided into field course (4 credit points) and lectures (4 credit points), ninning in 2nd semester. The field course (week before semester starts) is compulsory for the lecture series.
- Terrestrial Ecology (4 credit points) (Taken as part of BIOL 3202)

Terrestrial ecology considers the biology of organisms in terrestrial ecosystems and analyses their distribution and abundance. This module investigates the relationships between ecol-

ogy and the management of populations and communities for conservation and exploitation.
- Plant Ecology (4 credit points) (Taken as part of BIOL 3202)

Plant ecology examines the ecological processes that produce complex interactions within plant populations. The role of genetics, demography and populations structure in the management and conservation of plants will be considered.

Chemistry
- Chemistry 3B (Environmental) (CHEM 3602,4 credit points)

Consists of 2 hours of lectures and 2 hours of practical each week, covering the subjects Chemistry Laboratory Practices, Marine Chemistry, Mineral Chemistry and Atmospheric Photochemistry. Assessment is by exam and practical.

Geography
- Coastal Zone Management (6 credit points) (Taken as part of GEOG3102)
- Geographical Information Systems (6 credit points) (Taken as part of GEOG 3102)
- Rock Weathering (6 credit points) (Taken as part of GEOG 3002)
- Agricultural Chemistry & Soil Science
- Advanced Soil Chemistry (6-credit points). (Taken as part of SOIL 3002)

Geology and Geophysics
- Environmental Geophysics (GEOP 3005, 4 credit points)
- Chemical Processes in the Oceans (MARS 3001/MS8,6 credit points)
- Marine Geology and Palaeoclimates (MARS 3001/MS9, 6 credit points)
- Paleobiology (GEOL 3004, 4 Credit points)

Microbiology
- Microbiology (2 x 4 credit points, one each semester) (Taken as part of MICR 2001 and 3002)

These 2 modules must be taken together. They cannot be taken individually.

The 1st Semester module would cover: an introduction to microbiology; basic techniques (microscopy, staining, cultivation of bacteria); sterilization and disinfection; prokaryotes; eukaryotes; and, microbial growth, with 3 hours of lectures, 1 of tutorials and 4 of practical each week for the first 7 weeks of semester.

In second semester, the module would consist of 1 lecture and 3 hours of practical each week for the whole semester, covering environmental aspects of plant, soil and water microbiology.

Students commencing Senior year from 2001

ENVI 3002 covers topics in environmental economics and risk assessment, as well as issues concerning environmental impact assessment. There is also a section concerning the logical structure of environmental sampling, including the nature of variables, univariate and multivariate measures, correlation of environmental variables and interpretation of data. This 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.

AGCH 3012 Rural Environmental Chemistry
4 credit points
Prerequisite: ENVI 2003, 2004, 2103 and 2104 (From year 2001: ENVI 2001 and 2002). **Corequisite:** ENVI 3001. **Offered:** February. **Classes:** 1 two hour tutorial and laboratory session per week. A 6-day field trip held in Orientation week. **Assessment:** Practical Assessment (report) (100%).

NB: This unit of study is offered only to students enrolled in the BSc(Environmental). A maximum quota of 25 may exist. Contact the Environmental Science advisor.
This unit of study is based on a field excursion to areas such as the Namoi Valley near Narrabri, and the Macquarie Marshes in the Macquarie Valley, where agriculture based on irrigation has been developed. The elementary aspects of soil formation and profiling will be examined and the extent of environmental impacts of these agricultural enterprises and human settlement assessed. Observations will be made in the field and samples of water, sediment and soil brought back for analysis at the Univer-

sity, covering tests such as pH, oxygen content, redox potential, salt content, nutrient content, water and solute transport and pesticide content. An interactive computer exercise will be used to foster knowledge gained from this excursion and its associated sample analyses.

Offered only to students enrolled in the BSc(Environmental). A maximum quota of 25 may exist. Contact the Environmental Science advisor.

CHEM 3601   Chemistry 3A (Environmental)
4 credit points
Prerequisite: CHEM 1102 or 1902 and ENVI 2103 and 2104 (From year 2001: CHEM 1102 or 1902 and ENVI 2002). **Prohibition:** May not be counted with CHEM 3101 or 3201 or 3901 or 3102 or 3202, or 3902 or 3903. **Offered:** February. **Classes:** 2 lec and 2hr prac/workshop/wk. **Assessment:** 90min exam per module (67%), prac reports (33%).

The aim of this unit of study is to provide students enrolled in the Environmental degree program with the advanced chemistry required for an understanding of the subject. Environmental aspects of the chemistry of the main group elements and their compounds will be considered. The second topic in this unit of study is the chemistry of the atmosphere which will lead to an investigation of the natural atmosphere, photochemical smog, acid rain and ozone depletions.

CHEM 3602   Chemistry 3B (Environmental)
4 credit points
Prerequisite: CHEM 1102 or 1902 and ENVI 2103 and 2104 (From year 2001: CHEM 1102 or 1902 and ENVI 2002). **Prohibition:** May not be counted with CHEM 3101 or 3201 or 3901 or 3102 or 3202 or 3902 or 3903. **Offered:** July. **Classes:** 2 lec and 2hr prac/workshop/wk. **Assessment:** 90min exam per module (67%), prac reports (33%).

This unit of study contains a general introduction to laboratory safety and provides an introduction to risk and hazard analysis, recognition and limitation procedures. It will enable the student to use, locate and retrieve information from safety data bases. There will be an overview of the actions and effects on human health especially with respect to carcinogens. The safe use, storage and disposal of chemicals and radiation sources will be covered.

The themes developed in CHEM 3601 will also be continued with the environmental chemistry of the D-block elements considered. Students will select their final module from those offered by the School of Chemistry for CHEM 3102.

PHYS 3600   Energy and the Environment
4 credit points
Prerequisite: ENVI 2104 or 12 credit points of Junior Physics (From year 2001: ENVI 2002 or 12 credit points of Junior Physics).
Offered: February. **Classes:** 1 lec & 1 sem & 2hrs made up of sem, field trips, project work and pres/wk. **Assessment:** 2000w essay (25%), 2000w case study & oral presentation (45%), seminars following field trips (30%).

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, atmospheric impacts: ozone depletion and pollution, transportation and pollution, energy management in buildings, solar thermal energy, photovoltaics, nuclear energy, risk assessment, 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 per week made up of 3 field trips, work on a project and oral presentation of an essay and the results of the project.

Honours in the Bachelor of Science (Environmental Science)

Students of sufficient merit may be admitted to an Honours course in the Bachelor of Science (Environmental Science). 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 attends 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'.)

BSc(Environmental)

Units of study

Bachelor of Science (Marine Science) degree program

Summary of requirements

The Bachelor of Science (Marine Science) award course requires three years of full-time study. An Honours program is available and requires a further year of full-time study. To qualify for this course, students must complete 144 credit points, which must include:

- Junior units of study to the value of 12 credit points from each of the Science Subject Areas of Biology and Geosciences (Geography, Geology) and Mathematics, and 6 credit points from each of the Science Subject Areas of Chemistry and Physics (the study of Biology, Chemistry, Mathematics and Physics at the Advanced level is highly recommended).
- The specialist Marine Science units of study MARS 2001, MARS2002, MARS2003, MARS2004, MARS 3001, MARS 3002, MARS3101, MARS3102
- 16 credit points of Intermediate units of study in the Science Subject Area of Biology; and an additional 16 credit points of Intermediate units of study from Science Subject Areas and Civil Engineering units of study CTVL 3401 and CIVL 4602 (Civil Engineering units of study subject to confirmation/approval)
- 36 credit points from Senior units of study in the Science Subject Areas of Marine Sciences, plus 12 credit point selected from the Science Subject Areas of Biology, Environmental Science, Geosciences or Marine Science.

Typical Program of study

A typical program of study is:

First Year
- 12 credit points of Junior Biology
- 12 credit points of Junior Geosciences
- 12 credit points of Junior Mathematics
- 6 credit points of Junior Physics
- 6 credit points of Junior Chemistry

Second Year
- 16 credit points from MARS 2001, MARS 2002, MARS 2003, MARS 2004
- 16 credit points from Intermediate Biology*
- 16 credit points from Junior or Intermediate Science Subject Areas and Civil Engineering units CTVL 3401 and CIVL 4602 (these Engineering units of study subject to confirmation/approval).

Third Year
- 48 credit points from MARS 3001, MARS 3002, MARS 3101, MARS 3102

The Resolutions of the Senate governing candidature for the course of Bachelor of Science listed in Chapter 7 also govern the BSc (Marine Science) course. Table IC is the Table of units of study for the Bachelor of Science (Marine Science) course; students should also refer to the Table of units of study for the BSc (Table I).

UAI

A quota exists for admission into the course of Bachelor of Science (Marine Science).

Transferring to the BSc (Marine Science)

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

BSc course resolutions

See Chapter 7.

*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.

Table IC: Bachelor of Science (Marine Science)

(a) (b)	(c)	(d)/(e)	(f)
	Credit	A) Assumed Knowledge Q) Qualifying P) Prerequisite	
Unit of Study	Points	C) Corequisite N) Prohibition	Offered

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; and

(ii) at least 12 credit points of Junior units of study from the Science Subject Areas of Geography and/or Geology; and

(iii) at least 12 credit points of Junior units of study from the Science Subject Area of Mathematics; and

(iv) at least 6 credit points of Junior units of study from the Science Subject Area of Physics; and

(v) at least 6 credit points of Junior units of study from the Science Subject Area of Chemistry.

NB: The study of Biology, Chemistry, Mathematics and Physics at the Advanced level is highly recommended.

B. Intermediate Units of Study

Candidates are required to enrol in and complete:

(i) MARS 2001, MARS 2002, MARS 2003 and MARS 2004; and

(ii) 16 credit poults of Intermediate units of study from the Science Subject Area of Biology*;

(iii) 16 credit points of Intermediate units of study from Science Subject Areas and from Civil Engineering units of study CIVL 3401 andCIVL 4602 (Civil Engineering units of study subject to confirmation/approval).

*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.

MARS 2001 A	Introductory Marine Science	4	P) 24 credit points of Junior units of study from Science Discipline Areas. This is a qualifying unit of study for MARS 3001 and 3002. Some options in Senior Marine Science have additional prerequisites.	*February*
MARS 2002 B	Introductory Marine Science	4	P) As for MARS 2001.	*July*
MARS 2003	Marine Science Field School	4	P) 48 credit points of units of study from Junior Science Subject Areas. C) MARS 2001.	*February*
MARS 2004	Marine Techniques	4	P) 48 credit points of units of study from Junior Science Subject Areas and MARS 2003. C) MARS 2002.	*July*

C. Senior Units of Study

Candidates are required to enrol in and complete:

(i) 36 credit points of Senior Units of study from the Science Subject Area of Marine Science; and

(ii) 12 credit points Senior Units of study from the Science Subject Areas of Biology, Environmental Science, Geography, Geology, or Marine Science.

MARS 3001	Marine Science A	12	P) MARS 2002. There are prerequisites for some options, see options entries.	*February*
MARS 3002	Marine Science B	12	P) MARS 2002. There are prerequisites for some options, see option entries.	*July*
MARS 3101	Marine Science C	12	*NB: Unit of study subject to confirmation and approval by Faculty. Not available in 2000.*	*February*
MARS 3102	Marine Science D	12	*NB: Unit of study subject to confirmation and approval by Faculty. Not available in 2000.*	*July*

Bachelor of Science (Marine Science)

MARS 2003 Marine Science Field School
4 credit points
Prerequisite: 48 credit points of units of study from Junior Science Subject Areas. **Corequisite:** MARS 2001. **Offered:** February.
Classes: Field School & Prac/Sem 2 hrs/wk. **Assessment:**
Participation in field school, participation in practicals, assignments.
Marine Scientists are generally involved in a wide variety of fieldwork throughout their careers. A detailed knowledge of field methods and techniques is therefore a necessary component in the education of marine scientists. This unit of study introduces students to a range of field issues within the coastal and marine environment during a week-long field school held during February, prior to commencement of lectures. 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 small project-based data collection exercises during the field school. These data will provide resources for the practical/seminar part of the course undertaken during semester.
Practical: The practical classes are intended to familiarise the student with data processing techniques and the seminars are intended to draw the connection between field work and the theoretical issues discussed in the Introductory Marine Science Course.

MARS 2004 Marine Techniques
4 credit points
Prerequisite: 48 credit points of units of study from Junior Science Subject Areas and MARS 2003. **Corequisite:** MARS 2002. **Offered:** July. **Classes:** Prac 3 hrs/wk, two 2-day field excursions.
Assessment: Participation in the field excursions and practicals, assignments.

Marine scientists are involved in the study of the largest and most diverse and dynamic environment on the planet. A multi-disciplinary approach is required to investigate the complex physical, biological and chemical interactions that compose this environment. This course will build on MARS 2003, and systematically introduce students to a range of field and laboratory techniques used in the acquisition and analysis of marine biological and marine geoscience data. During the course students will collect data in the field, undertake laboratory analysis, and input the results into spreadsheet/databases, and finally prepare and present a final report on their findings. Field techniques will include vibrocoring, surveying, dredging, and biomass sampling, laboratory techniques will include core, sediment and water quality analysis, as well as computer drafting, spreadsheet, database and report preparation, with an oral presentation of the results.

Practical: The practical classes are intended to familiarise the student with data processing techniques and the seminars are intended to draw the connection between field work and the theoretical issues discussed in the Introductory Marine Science Course.

Bachelor of Science (Molecular Biology and Genetics) degree program

The course offers an integrated and comprehensive coverage of aspects of modern molecular biology and genetics. This is an Advanced program. Students will have the opportunity to develop a full understanding (at the chemical and physical levels) of the structure, information content and replication of the genetic material (DNA, RNA), the organisation and expression of the encoding genes, and the structure and reactivity of the gene products (proteins). This will provide a background for the introduction of advanced topics including genetic and protein engineering, macromolecular interactions and recognition, the molecular mechanisms of cellular differentiation and organism development, the molecular basis of inherited disease and pathogenesis, biotechnology, and medical diagnostic molecular biology. All students will also participate as a group in a three-year program of seminars and discussions to give a broad perspective of the field. Graduates with the Honours degree would be highly sought after in a wide variety of biological and medical research laboratories and in hospitals and industry. In addition, the course will prepare the graduate for PhD training in many of the cutting-edge biological and medical research areas.

Summary of requirements

The Bachelor of Science (Molecular Biology and Genetics) degree program requires three years of full-time study. An Honours program is available and requires a further year of full-time study. Progression towards the Bachelor of Science (Molecular Biology and Genetics) is by accumulation of credit points gained by completing units of study. A total of 144 credit points is required for the degree. These must include:
- 48 credit points from Senior units of study
- 48 credit points from Intermediate units of study

Students will also be required to perform at a standard that will allow them to be admitted into an Honours year.

Units of study taken must include 12 credit points of Junior Mathematics and 12 credit points each of Junior Biology and Chemistry.

All students in the Bachelor of Science (Molecular Biology and Genetics) must complete at least 24 credit points of Junior Advanced units of study (or qualify for admission to 16 credit points of Intermediate Advanced units of study), at least 16 credit points of Intermediate Advanced units of study and at least 24 credit points of Senior Advanced units of study. Units of study taken under the Faculty's Talented Student Program may be substituted for Advanced units.

The Resolutions of the Senate governing candidature for the degree of Bachelor of Science also govern the BSc (Molecular Biology and Genetics) degree program. Students should refer to Table ID and to the Table of units of study for the BSc (Table I).

Sequence of study

Junior Year
BIOL 1901 and (1904 or 1905)
CHEM (1905 or 1906 or 1907) and (1902 or 1904 or 1909) (The combination of CHEM 1907 and 1909 is the preferred option.)
12 credit points of Junior Mathematics units of study (excluding MATH 1011, 1012, 1013, and 1015) (It is recommended that students include some statistics in their choice of Mathematics units of study.)
12 credit points of other Junior units of study from the BSc table of units of study

It is recommended that the extra 12 credit points be selected from Junior units of study in Physics or in Computer Science.

Intermediate Year
BCHM (2001 or 2901) and (2002 or 2902)
BIOL 2905 and 2906
CHEM 2903
MICR2909.

Senior Year
Core (March semester)
BCHM 3901
BIOL 3903
Option (July semester)
Two of:
BIOL 3905
BCHM 3904
CHEM 3903
MICR 3904/3004

Other suitable options incorporating molecular biology and genetics would be considered by the Program Committee.

Honours Year
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.

UAI
A quota exists for admission into the degree of Bachelor of Science (Molecular Biology and Genetics).

Transferring into the BSc (Molecular Biology and Genetics)

Students with appropriate backgrounds may be permitted to transfer from other degrees offered by the Faculty of Science, or from other universities, into the BSc (Molecular Biology and Genetics), subject to quota limitations.

Progression requirements

A minimum requirement for progression in the BSc (Molecular Biology and Genetics) will be set annually and will be based on WAM and performance in Advanced subjects. Students in Advanced Degree programs are expected to obtain a credit average in each year of study.

BSc Degree Resolutions

See Chapter 7

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

(a) (b) Unit of Study	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(0 Offered

A. Junior Units of Study

Candidates are required to enrol in and complete:

(i) (a) BIOL 1901 and BIOL (1904 or 1905); and

  (b) CHEM (1905 or 1906 or 1907) and CHEM(1902 or 1904 or 1909) (The combination of CHEM 1907 and 1909 is the preferred option.)

OR

Instead of (a) and (b), qualify for admission to BCHM 2901, BIOL 2905, CHEM 2903 and MICR 2909; and

(ii) 12 credit points of Junior units of study from the Science Subject Area of Mathematics (excluding MATH 1011, 1012, 1013, and 1015) (It is recommended that students include some statistics in their choice of Mathematics units of study.); and

(iii) 12 credit points of other Junior units of study from BSc units of study (Table I). It is recommended that the extra 12 credit points be selected from Junior units of study in Physics or in Computer Science.

Unit	Name	CP	Requisites	Offered
BIOL 1904	Living Systems Molecular (Advanced)	6	A) Biology section of HSC 4-unit or Biology 1901 or eqiuvalent. N) May not be counted with BIOL 1002 or 1003 or 1902 or 1905. *NB: Students must be enrolled in the Bachelor of Science (Molecular Biology and Genetics) degree.*	*July*
BIOL 1905	Human Biology Molecular (Advanced)	6	A) HSC Biology section of HSC 4-unit Science or BIOL 1901 or equivalent. N) May not be counted with BIOL 1002 or 1003 or 1902 or 1904. *NB: Students must be enrolled in the Bachelor of Science (Molecular Biology and Genetics) degree.*	*July*
CHEM 1905	Chemistry 1A Molecular (Advanced)	6	P) UAI of at least 92.5 and at least 75% in HSC 2-unit Chemistry or equivalent. N) May not be counted with CHEM 1001 or 1101 or 1901 or 1903 or 1906.	*February*
CHEM 1906	Chemistry 1A Molecular (Special Studies Program)	6	P) UAI of at least 98 and at least 85% in HSC 2-unit Chemistry or equivalent. N) May not be counted with CHEM 1001 or 1101 or 1901 or 1903 or 1905	*February*
CHEM 1907	Chemistry 1 Life Sciences A Molecular (Advanced)	6	P) UAI of at least 92.5 and at least 75% in HSC 2-unit Chemistry or equivalent.	*February*
CHEM 1909	Chemistry 1 Life Sciences B Molecular (Advanced)	6	P) CHEM 1907 or 1908 or equivalent. N) May not be counted with CHEM 1101 or 1101 or 1901 or 1903	*July*

B. Intermediate Units of Study

Candidates are required to enrol in and complete:

(i) BCHM (2001 or 2901) and BCHM (2002 or 2902); and

(ii) BIOL 2905 and BIOL 2906; and

(iii) CHEM 2903; and

(iv) MICR 2909.

Note: Students wishing to major in Molecular Biology or Genetics in their Senior year should have completed both BCHM (2001/2901) and (2002/2902) and BIOL 2905

Unit	Name	CP	Requisites	Offered
CHEM 2903	Chemistry 2 (Life Sciences Advanced)	8	Q) CHEM 1902, 1904 or 1909. P) 12 credit points of Junior Mathematics. N) May not be counted with CHEM 2001 or 2101 or 2301 or 2901 or 2502.	*February*
MICR 2909	Fundamental and Applied Microbiology (Advanced)	8	P) BIOL 1901 and 1904/1905 and CHEM 1902 or 1904 or 1905 or 1906 or 1907 or 1909. N) May not be counted with MICR 2005, 2006, 2906 or 2009	*July*

C. Senior Units of Study

Candidates are required to enrol in and complete:

(i) February semester Core Units of Study:

  (a) BCHM 3901; and

  (b) BIOL 3903; and

(ii) July semester Elective Units of study, select two options from:

  (a) BCHM 3904

  (b) BIOL 3905

  (c) CHEM 3903

  (d) MICR 3004 or MICR 3904

Note: At least 24 credit points must be completed from Senior Advanced units of study.

Unit	Name	CP	Requisites	Offered
BCHM 3904	Metabolic and Medical Biochemistry Molecular (Advanced)	12	Q) BCHM 2002 or 2902. N) May not be counted with BCHM 3002 or 3902	*July*
BIOL 3905	Eukaryotic Genetics and Development Molecular (Advanced)	12	Q) 16 credit points of Biology including BIOL 2905. N) May not be counted with BIOL 3203 or 3904	*July*
CHEM 3903	Chemistry 3 Life Sciences (Advanced)	12	Q) CHEM 2903. N) May not be counted with CHEM 3101, 3201, 3601, 3901, 3102, 3202, 3602 or 3902.	*July*

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

(a) Unit of Study	(b)	(<0 Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(J) Offered
MICR 3004	Molecular Biology of Pathogens Molecular	12	Q) MICR 2005 or 2906 or 2909.	*July*
MICR 3904	Molecular Biology of Pathogens Molecular (Advanced)	12	Q) MICR 2005 or 2906 or 2909.	*July*

D. 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.

BSc(Molecular
Biology & Genetics)

Table

(a) Unit of Study	(b)	(<0 Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(J) Offered

Bachelor of Science (Molecular Biology and Genetics)

BIOL 1904   Living Systems Molecular (Advanced)
6 credit points
Dr G M Wardle, Dr K Raphael
Assumed knowledge: Biology section of HSC 4-unit or Biology 1901 or eqiuvalent. **Prohibition:** May not be counted with BIOL 1002 or 1003 or 1902 or 1905. **Offered:** July. Classes: 3 lec & 3hr prac/wk & 7 discussion sessions. **Assessment:** One 2hr exam, assignments, classwork and an assignment based on discussion sessions.

NB: Students must be enrolled in the Bachelor of Science (Molecular Biology and Genetics) degree.

This unit of study is the same as BIOL 1902 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 can be included as part of the assessment of the unit of study. Students must be enrolled in the Molecular Biology and Genetics Degree Program.

BIOL 1905   Human Biology Molecular (Advanced)
6 credit points
Assumed knowledge: HSC Biology section of HSC 4-unit Science or BIOL 1901 or equivalent. **Prohibition:** May not be counted with BIOL 1002 or 1003 or 1902 or 1904. **Offered:** July. Classes: 3 lec & 3hr prac/wk & 7 discussion sessions. **Assessment:** One 2hr exam, assignments, classwork and an assignment based on discussion sessions.

NB: Students must be enrolled in the Bachelor of Science (Molecular Biology and Genetics) degree.

This unit of study is the same as BIOL 1903 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 can be included as part of the assessment of the unit of study.

Students must be enrolled in the Molecular Biology and Genetics Degree Program.

CHEM 1905 Chemistry 1A Molecular (Advanced)
6 credit points
Prerequisite: UAI of at least 92.5 and at least 75% in HSC 2-unit Chemistry or equivalent. **Prohibition:** May not be counted with CHEM 1001 or 1101 or 1901 or 1903 or 1906. **Offered:** February. Classes: 3 lec/tut & 3hr prac/wk for 10 weeks & 7 discussion sessions. **Assessment:** One 3hr closed book exam (70%), prac reports and quizzes (15%), assignments (5%), essay based on discussion sessions (10%).

This unit of study is the same as Chemistry 1901 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 Molecular (Special Studies Program)
6 credit points
Prerequisite: UAI of at least 98 and at least 85% in HSC 2-unit Chemistry or equivalent. **Prohibition:** May not be counted with CHEM 1001 or 1101 or 1901 or 1903 or 1905. **Offered:** February. Classes: 3 lec/tut & 3hr prac/wk & 7 discussion sessions. **Assessment:** One 3hr closed book exam (70%), prac reports (15%), assignments (5%), essay based on discussion sessions (10%).

This unit of study is the same as Chemistry 1903 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 Molecular (Advanced)
6 credit points
Prerequisite: UAI of at least 92.5 and at least 75% in HSC 2-unit Chemistry or equivalent. **Offered:** February. **Classes:** Total of 6hrs per week consisting on average of 3 lectures, 1 tutorial/discussion session and 2hrs of practical work. **Assessment:** Exam 75%, practicals 15%, essay based on discussion sessions 10%.
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 ah 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.
Practical: (30hr): These will be designed to develop practical skills based on the theory presented in the lectures.
Textbooks
A booklist is contained in the booklet Information for Students

distributed at enrolment. Further information can be obtained from the School.

CHEM 1909 Chemistry 1 Life Sciences B Molecular (Advanced)
6 credit points
Prerequisite: CHEM 1907 or 1908 or equivalent. **Prohibition:** May not be counted with CHEM 1101 or 1101 or 1901 or 1903. **Offered:** July. **Classes:** Total of 6hrs per week consisting on average of 2 lectures, 1 tutorial/discussion session and 3hrs of practical work. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.
Lectures (26 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/Discussions (13 hr): These will provide aspects of problem solving relevant to the unit of study.
Practical: (30 hr) These will be designed to develop practical skills based on the theory presented in the lectures.
Textbooks
A booklist is contained in the booklet Information for Students

distributed at enrolment. Further information can be obtained from the School.

CHEM 2903 Chemistry 2 (Life Sciences Advanced)
8 credit points
Qualifying: CHEM 1902,1904 or 1909. **Prerequisite:** 12 credit points of Junior Mathematics. **Prohibition:** May not be counted with CHEM 2001 or 2101 or 2301 or 2901 or 2502. **Offered:** February. Classes: 4 lec & 4hr prac/wk. **Assessment:** Three 2hr closed book exams (67%) and prac reports (33%).

The aim of this unit of study is to provide students enrolled in the Molecular Biology and Genetics degree program with some of the chemical knowledge required for an understanding of the subject. Approximately 36 of the lectures form a core, which is common with other Intermediate Chemistry courses. The remaining 20 lectures are distinct for this unit of study and apply the core knowledge to chemical problems in the life sciences. 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.
Textbooks
As for CHEM 2001

MICR 2909   Fundamental and Applied Microbiology (Advanced)

8 credit points
Dr Carter
Prerequisite: BIOL 1901 and 1904/1905 and CHEM 1902 or 1904 or 1905 or 1906 or 1907 or 1909. Prohibition: May not be counted with MICR 2005, 2006, 2906 or 2909. Offered: July. Classes: 3 lec, 1 tut & 4hr prac/wk & 9 advanced seminars. Assessment: One 3 hr exam, one 2 hr exam, continuous prac assessment, assignment.
This unit of study is designed to provide students with the knowledge and technical skills needed to understand and manipulate microorganisms as part of the field of molecular biology and genetics. In the first part of the unit of study, students are introduced to the nature and scope of microbiology, and to practical methods for handling and analysing microorganisms. The latter part of the unit focuses on the role of microorganisms in health and disease, and on industrial processes involving microorganisms, including recombinant DNA products, biocontrol agents and bioremediation. An advanced seminar series accompanies the latter part of the unit, and focuses on recent research topics in molecular microbiology. This is assessed in a 2 hr theory exam.
Textbooks
As for MICR 2001

BCHM 3904   Metabolic and Medical Biochemistry Molecular (Advanced)

12 credit points
Dr Easterbrook-Smith, Mrs Johnston, Assoc Prof Whitlaw and Biochemistry staff
Qualifying: BCHM 2002 or 2902. **Prohibition:** May not be counted with BCHM 3002 or 3902. **Offered:** July. **Classes:** 4 lec & 8hr/wk & 4 seminars. **Assessment:** One 3hr exam, one 2hr exam, one 1hr exam, prac work.

This unit of study is the same as that in the normal degree program except for the addition of seminars and discussions in this discipline.
Textbooks
Cooper GM. The Cell: A Molecular Approach. OUP, 1997
Course Manual for BCHM 3002/3902/3904

BIOL 3905   Eukaryotic Genetics and Development Molecular (Advanced)

12 credit points
Dr B Oldroyd
Qualifying: 16 credit points of Biology including BIOL 2905.
Prohibition: May not be counted with BIOL 3203 or 3904. **Offered:** July. **Classes:** 4 lec & 8 prac/wk, one 2 day excursion & 4 discussion sessions. **Assessment:** One 3hr theory exam, prac reports & projects, seminars and an essay based on discussion sessions.

This unit of study is the same as BIOL 3904 except for the addition of four topical seminars and discussions in this discipline.

CHEM 3903   Chemistry 3 Life Sciences (Advanced)
12 credit points
Qualifying: CHEM 2903. Prohibition: May not be counted with CHEM 3101, 3201, 3601, 3901, 3102, 3202, 3602 or 3902. Offered: July. Classes: 4 lec & 8 prac/wk & 4 compulsory discussion sessions. Assessment: Four 90-min exams (60%), prac reports (30%), assignment based on discussion sessions (10%).
The aim of this unit of study is to provide students enrolled in the Molecular Biology and Genetics Degree Program with some advanced chemistry required for an understanding of the subject. The unit consists of modules dealing with DNA chemistry, proteins, metals in biology, medicinal chemistry, chemical safety and a variety of other options that are important for understanding chemical processes or techniques used in molecular biology and genetics. A list of modules and more detailed descriptions are given in the Senior Chemistry Handbook available from the School. A special practical component is designed to illustrate the principles given in the lectures. In addition, 4 seminars from specialists in molecular biology and genetics will be given to illustrate recent research in the area.

MICR 3004   Molecular Biology of Pathogens Molecular

12 credit points
Dr Carter
Qualifying: MICR 2005 or 2906 or 2909. Offered: July. Classes: 3 lec & 9hrs prac/wk and 4 discussion sessions. Assessment: Two 2hr exams, practicals, and an essay based on discussion sessions. This unit of study is the same as that in Microbiology 3003, except for the addition of 4 special molecular biology and genetics discussion sessions, which consist of topical seminars and discussions in this discipline. As essay based on these discussions is included as part of the assessment of the unit of study.

MICR 3904   Molecular Biology of Pathogens Molecular (Advanced)

12 credit points
Dr Carter
Qualifying: MICR 2005 or 2906 or 2909. **Offered:** July. **Classes:** 4 lec & 8hrs prac/wk and 4 discussion sessions. Assessment: Two 2hr exams, practicals, and an essay based on discussion sessions. Same details as MICR 3004, with advanced components.

BSc(Molecular Biology & Genetics)

Units of study

Bachelor of Science (Nutrition) degree program

If you are interested in a career in nutrition and dietetics the Human Nutrition Unit within the Department of Biochemistry offers 3 specialist courses. These are the BSc(Nutrition) - an Advanced Science degree, the Master of Nutrition & Dietetics and the Master of Nutritional Science.

Bachelor of Science (Nutrition)

The Bachelor of Science (Nutrition) degree program requires three years of full-time study. Students who want accreditation as a dietitian will need to complete the clinical strand in the Honours year. Progression towards the Bachelor of Science (Nutrition) is by accumulation of credit points gained by completing units of study. A total of 144 credit points is required for the degree.

All students in the Bachelor of Science (Nutrition) must complete at least 24 credit points of Junior Advanced units of study (or qualify for admission to 16 credit points of Intermediate Advanced units of study), at least 16 credit points of Intermediate Advanced units of study and at least 24 credit points of Senior Advanced units of study. Units of study taken under the Faculty's Talented Student Program may be substituted for Advanced units.

Students will also be required to perform at a standard that will allow them to be admitted into an Honours year.

The Resolutions of the Senate governing candidature for the degree of Bachelor of Science also govern the BSc (Nutrition) degree program. Students should refer to Table IE and to the Table of units of study for the BSc (Table I).

Sequence of study

Junior Year
In their first year students enrol in four junior units of study per semester:
- BIOL 1901 and (1902 or 1903); and
- CHEM (1101 or 1901 or 1903) and (1102 or 1902 or 1904); and
- 12 credit points of Junior Mathematics units of study; and
- 12 credit points of other Junior units of study from the Science Subject Areas of: Computer Science, Physics or Psychology

At least 24 credit points of Junior units must be taken at the Advanced level.

Intermediate Year
In their second year students enrol in the following units of study per semester:
- NUTR 2901 and 2902; and
- BCHM (2001 or 2901) and (2002 or 2902); and
- PHSI2001 and 2002; and
- At least 8 credit points of Intermediate units of study (4 credit points each semester) from the Science Subject Areas of Chemistry, Microbiology or Pharmacology

Senior Year
In their third year students enrol in the following units of study per semester:
- NUTR 3901 and 3902; and
- BCHM 3902; and
- One of the foUowing Senior units of study: BCHM 3001, BCHM 3901, PHSI 3001, PHSI 3901 or AGCH 3003

Honours Year
Candidates for the Honours degree in Nutrition shall complete an Honours year by coursework or research.

UAI
A quota exists for admission into the degree of Bachelor of Science (Nutrition).

Transferring into the BSc (Nutrition)

Students with appropriate backgrounds may be permitted to transfer from other degrees offered by the Faculty of Science, or from other universities, into the BSc (Nutrition), subject to quota limitations.

Progression requirements

A minimum requirement for progression in the BSc (Nutrition) will be set annually and will be based on WAM and performance in Advanced subjects. Students in Advanced Degree programs are expected to obtain a credit average in each year of study.

BSc Degree Resolutions
See Chapter 7.

Table IE: Bachelor of Science (Nutrition)

(a) (b) Unit of Study	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered

A. Junior Units of Study

Candidates are required to enrol in and complete:
(i) BIOL 1901 and BIOL (1902 or 1903); and
(ii) CHEM (1101 or 1901 or 1903) and CHEM (1102 or 1902 or 1904); and
(iii) 12 credit points of Junior units of study from the Science Subject Area of: Mathematics; and
(iv) 12 credit points of other Junior units of study from the Science Subject Areas of: Computer Science, Physics or Psychology
Note: At least 24 credit points of Junior units of study must be completed at the Advanced level.

B. Intermediate Units of Study

Candidates are required to enrol in and complete:
(i) NUTR 2901 and 2902; and
(ii) BCHM (2001 or 2901) and BCHM (2002 or 2902); and
(ii) PHSI2001 and 2002; and
(iii) at least 8 credit points of Intermediate units of study from the Science Subject Areas of Chemistry, Microbiology or Pharmacology.

| NUTR 2901 | Introductory Food Science (Advanced) | 8 | P) BIOL 1901 and (1902 or 1903) and CHEM (1101 or 1901 or 1903) and CHEM (1102 or 1902 or 1904). | *February* |
| NUTR 2902 | Introductory Nutritional Science (Advanced) | 8 | P) NUTR 2901. | *July* |

C. Senior Units of Study

Candidates are required to enrol in and complete:
(i) NUTR 3901 and 3902; and
(ii) BCHM 3902; and
(iii) One of the following Senior units of study: BCHM 3001, BCHM 3901, PHSI 3001, PHSI 3901 or AGCH 3003.

| NUTR 3901 | Nutrition in Individuals (Advanced) | 12 | P) NUTR 2902. | *February* |
| NUTR 3902 | Nutrition in Populations (Advanced) | 12 | P) NUTR 2902. | *July* |

D. Honours Units of Study

Candidates for the Honours degree must achieve minimum grades of Credit in Senior units of study
(i) Honours year by coursework:
Candidates are required to enrol in and complete: NUTR 4001*; and NUTR 4002*.
(ii) Honours year by research:
Candidates are required to enrol in and complete: NUTR 4003*
*Honours codes for Nutritional Science subject to confirmation.

BSc(Nutrition)
Summary Table

Bachelor of Science (Nutrition)

NUTR 2901   Introductory Food Science (Advanced)
8 credit points
Associate Professor J Brand Miller
Prerequisite: BIOL 1901 and (1902 or 1903) and CHEM (1101 or 1901 or 1903) and CHEM (1102 or 1902 or 1904). **Offered:** February. **Classes:** 3 lec & 5 hr prac/wk. **Assessment:** One 3 hr exam (50%), practical (50%).

Foods as commodities

Food use around the world, including the origin, history, cultural and nutritional importance of each of the following major human foods: Animal foods, seafood, cereals (wheat, rice, maize), sugar, fats and oils, milk products, legumes and nuts, roots and tubers, green leafy vegetables, herbs and spices, alcohol, fruit, novel proteins.

Food Behaviour

Physical and chemical composition of various commodities (fruit and vegetables, carbohydrate foods, wheat and baked goods, eggs, dairy products, fats and oils, meat and poultry), 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 pigments, the five tastes, genetic differences, food volatiles, food flavour, texture and consistency. Enzymic and non-enzymic browning in foods: desirable versus undesirable browning reactions, prevention, limitation, effect of peeling, cutting, oxygen, sugar, salt sulphur dioxide, vitamin C, acids. Vegetables and fruits - various parts of the plant, types of tissue, cell structure, soluble and insoluble constituents (cell wall, vacuoles, choroplasts, chromoplasts, oil droplets, intercellular layers), pectic substances, cooking of fruit and vegetables, spoilage reactions. Carbohydrate foods 1 Sugars: types of sugars, crystal structures, mouthfeel, texturising, flavour modifying, fermentation. Carbohydrate foods 2 Starch: Chemical and physical structure, amylose, amylopectin, texturi sing, thickening properties, viscosity effects, effect of addition of sugar, acid, emulsifiers, origin of starch (rice, wheat, potato). Wheat - effect of milling, gluten structure, leavening agents, ingredients (shortening, emulsifiers, gluten, starch, salt, sugar. Eggs - functional properties of the albumen and yolk, coagulation of proteins, foaming properties, browning, emulsification, clarification, colour and flavour, deterioration and storage. Dairy products - physical structure and chemical composition of milk and dairy products such as butter, cheese, cream and dried milk, effect of whipping, acidity, fermentation, spoilage. Fats and oils - Physical and chemical structure of different fats and oils, functional properties, flavour, lubrication, texturisation, heat transfer, preservation, what happens when a food is fried, requirements of deep frying fats and oils. Meat and poultry - chemical and physical composition of red vs white meat, types of tissues (muscle, adipose, connective), conversion of live muscle to meat, effect of marination, ageing, pigment changes, cooking (dry vs moist), spoilage. Fish and shellfish -types, oily vs non-oily, differences in chemical and physical structure from meat, effect of cooking, problems, spoilage.

Textbooks

Mann J, Truswell AS (eds). Essentials of Human Nutrition.

Oxford: OUR 1998
Griswald N. The Experimental Study of Foods.

NUTR 2902   Introductory Nutritional Science (Advanced)
8 credit points
Associate Professor J Brand Miller
Prerequisite: NUTR 2901. **Offered:** July. **Classes:** 3 lec & 5 hr prac/wk. **Assessment:** One 3 hr exam (50%), practical (50%).

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, 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: Energy and fatty acid ratios in 24 h food intake Students will collect 24 hour food intake on themselves and one of the following - a young child, an office worker and a trained athlete. Students will homogenise all foods eaten in a 24 h period, sample representatively and analyse energy content by bomb calorimetry and determine fat, protein, starch, total sugars, dietary fibre and fatty acid composition. Nitrogen balance Students will conduct a study in rats comparing nitrogen balance on a nitrogen free diet, normal diet and high protein diet. After a baseline period on the diets, students will collect rat urine and faeces over 3 days and analyse N content. Findings will be compared with analysed N content of diet. Supermarket sleuth Students will be responsible in groups of gathering information in supermarkets on health claims on food labels, fat and energy content of full fat and reduced fat products, normal and low sugar products and variations in meat cuts. They will report the finding to the whole class in the final practical.

Textbooks

Mann J, Truswell AS (1998). Essentials of human nutrition.
    Oxford University Press, Oxford.
Proudlove R.K. 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
Dr P Lyons-Wall
Prerequisite: NUTR 2902. **Offered:** February. **Classes:** 4 lec & 8 hr prac/wk. **Assessment:** One 3 hr exam (50%), practical project (50%).

Lectures: Dietary intake assessment: basic concepts in nutritional status; four methods of dietary assessment in individuals, advantages and limitations; vahdation of dietary methods; nutritional guidelines, targets and recommended dietary intakes; computerised nutrient analysis; Atwater conversion factors; limitations of food composition analysis; critical interpretation of nutrient analysis

Behavioural influences on food intake

Clinical assessment and biochemical evaluation: 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: techniques for measuring 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 (exercise, starvation, obesity, diabetes)

Nutritional epidemiology: basic concepts (causality, randomised control trials, cohort studies, case-control studies, cross sectional and ecological studies); advantages and limitations of epidemiological methods; biological markers of chronic diseases; use of biostatistical tools in epidemiology; critical interpretation of published data.

Research design: qualitative research methods; questionnaire design

Statistics for nutrition: basic concepts (mean, median, standard deviation; association and regression in the relationship between two continuous variables; parametric and non parametric tests for group comparisons); statistical methods used to analyse dietary intake and epidemiological studies; data management and analysis.

Practical: Formats will include practical classes, problem-based learning with case histories and small group tutorials.

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
Prerequisite: NUTR 2902. **Offered:** July. **Classes:** 4 lec & 8 hr prac/wk. Assessment: One 3 hr exam (50%), practical project (50%).

Nutrition through the lifecycle: nutritional needs of infants, children, adolescents, pregnant and lactating women and older people.

Food Habits: theories of food habits; factors affecting food habits of individuals and societies; food habits of major ethnic and cultural groups in Australia.

Nutritional problems in contemporary communities and selected target groups: nutritional problems in Aboriginal communities, low income groups and non-English speaking communities.

Nutritional health and chronic disease: chronic diseases related to nutrition including, obesity, cancer, coronary heart disease, hypertension, non-insulin dependant diabetes, dental caries, osteoporosis, iron deficiency, iodine deficiency, vitamin A deficiency and folate deficiency; nutritional problems in developing countries.

Food and nutrition policies and guidelines: dietary guidelines; dietary goals and targets; Recommended Dietary Intakes; food selection guides; national and food and nutrition policies; local government food policies.

Food and Nutrition Systems: the food and nutrition system in Australia; food regulation in Australia

Principles of Public Health nutrition: history and philosophy of public health nutrition; the Ottawa Charter for health Promotion; needs assessment and program planning for populations; evaluation.

Public Health Nutrition Strategies and programs: theories of behaviour change; types of public health nutrition program in Australia; successful strategies for public health nutrition programs.

Principles of Nutrition Education: small group dynamic theories; Adult learning principles; learning styles; small group education strategies; program planning and evaluation; resource development.

Nutrition controversies: fad diets and alternative practitioners.

Practical: The aim of the practicals is to allow students to put into practice what is covered in the lectures. The practical sessions will include problem based learning learning with cases studies and small group tutorials. Practical project Students will work in groups on a major project over the entire semester. Students will be asked to plan a community intervention for a spe-cific target group. The project will require the students to conduct a needs assessment with the target group and to seek information from various community sources including government and non-government organisations and food industries. The students will write a report and present their project to the class.

NUTR 4001   Clinical Nutritional Science A
24 credit points
Dr M Allman-Farinelli
Prerequisite: NUTR 3901 and 3902. Offered: February.
Assessment: One 3 hr exam (50%), practical project (50%).
The contact hours per week are a <u>minimum</u> 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

NUTR 4002   Clinical Nutritional Science B
24 credit points
Dr M Allman-Farinelli
Prerequisite: NUTR 3901 and 3902. **Offered:** July.
See details under Clinical Nutritional Science A, NUTR 4001.

NUTR 4003   Nutrition Research
48 credit points
Dr S. Samman
Prerequisite: NUTR 3901 and 3902. Offered: February.
Students will be involved in full-time research under the supervision of a staff member within the Human Nutrition Unit, the Department of Biochemistry or a cognate department. During the year, students will be required to:

(i) carry out a supervised research project;

(if) present a written project proposal and present orally a brief literature survey and aims of tie 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.

BSc(Nutrition)

Units of study

Combined Science/Law degrees (BSc/LLB)

The University offers a combined Science/Law course similar to the combined courses of Arts/Law, Economics/Law, Economics(Social Sciences)/Law and Commerce/Law. The purpose of the course is to meet a demand for science graduates with legal training.

A student who is selected for enrolment in the Science/Law course may proceed to the LLB degree at the same time as being a candidate for the BSc degree, and may count up to 48 credit points of Law subjects. No other units of study offered by other Faculties may be credited towards the BSc degree. On completion of the remaining requirements for the Science degree, as specified in section 13 of the Resolutions of the Senate relating to the degree of Bachelor of Science, this degree is awarded and the student can then proceed to complete the requirements for the degree of Bachelor of Laws.

The order in which Law units of study are taken is specified in the Resolutions of the Senate governing the degree of Bachelor of Laws, which should be consulted by students. A summary of the relevant LLB and BSc Resolutions is:

(i) in the first year of attendance the student will take 36 credit points of Science Junior units of study and the units of study Legal Institutions and Law, Lawyers and Justice in Australian Society.

(ii) in the second year of attendance the student will take 32 credit points of Science Intermediate units of study, from at least two Science Subject Areas and Contracts (8 credit points), Criminal Law (8 credit points) Legal Research (0 credit points) and Legal Writing (0 credit points).

(iii) in the third year of attendance the student will take

Federal Constitutional Law (10 credit points) and Torts (10 credit points). In addition the student will take Science units of study which will include at least 24 credit points of Senior units of study from a single Science Subject Area and any other units of study required to give the student a minimum of 60 credit points of Science units of study at Intermediate and Senior level, and at least the minimum of 144 credit points required for the BSc degree.

In the combined Science/Law course students will spend the first three years in the main University grounds during which time the Science degree is 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 should be addressed to the Secretary to the Faculty of Science.

Honours units of study

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

1. Students taking the combined Science/Law course who wish to take an Honours program in Science and whose examination results in their early years qualify them to do so, may elect to spend an additional year in Science after the third year. Note, however that the Faculty of Law generally permits only one year of suspension of candidature from the Bachelor of Laws degree (including the combined Science/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.

2. 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 of units of study taken during the first three years of the combined course while the student is completing the Science segment of the course.

BSc Degree Resolutions

See Chapter 7.

Table II: Law Units of Study

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
LAWS 1006	Legal Institutions	6		*February*
LAWS 1007	Law, Lawyers and Justice in Australian Society	6		*July*
LAWS 1002	Contracts	8		*February*
LAWS 1003	Criminal Law	8		*July*
LAWS 1008	Legal Research	0		*February, July*
LAWS 1009	Legal Writing	0		*February*
LAWS 3000	Federal Constitutional Law	10		*February*
LAWS 3001	Torts	10		*July*

Law

LAWS 1006 Legal Institutions
6 credit points
Ms Millbank
Offered: February. Classes: one 1 hr lecture & two 2 hr seminars per week. **Assessment:** Assessment will involve a combination of participation and work in the seminars themselves and written tasks, which will include a court observation assignment, a case reading and analysis assignment, and an essay.

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
- key aspects of legislative process
- the relationship between law, government and politics
- the law reform process in action
- 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 1007 Law, Lawyers and Justice in Australian Society
6 credit points
Associate Professor Ziegert
Offered: July. Classes: one 2 hr lecture & two 2 hr seminars per week. **Assessment:** Classwork, one 1500 word assignment, one 3500 word essay and a take-home exam.

The aim of this unit of study is to present students with a range of perspectives from which to analyse the role of law and lawyers in Australian society. The unit has a jurisprudential (especially sociological jurisprudence) and comparativist orientation, and addresses broad issues of ethics and professional responsibility. The unit consists of five components: Law and Social Theory; Law, Liberalism and the Welfare State; Law, Civil Society and the Struggle for Social Justice; The Sociology of Law, Lawyers and Professions; and Legal Ethics and Professional Responsibility.

The first component, Law and Social Theory, consists of an introduction to law and social theory, including analysis of the legal formalist claim that law is objective and neutral. It examines legal decision-making as a constructed, interpretative process, with specific reference to lawyer/client relations, the trial process and judicial reasoning.

The second component, Law, Liberalism and the Welfare State, involves an historical and sociological analysis of the emergence of the welfare state and the concomitant changes in the form and function of law. Examples are drawn from social security law, anti-discrimination law, environmental law, family law and consumer law.

The third component, Law, Civil Society and the Struggle for Social Justice, examines the role of law in promoting the ideals of movements for social justice, e.g. in relations to issues of race, gender, class, disability and sexual orientation. This includes consideration of potential for law to promote social change; having regard to the prevalent practises of lawyers and judges; the effectiveness of particular regulatory programs in dealing with issues of social concern; and access to justice.

The fourth component, the Sociology of Law, Lawyers and Professions, is an introduction to the major issues in the sociology of law, lawyers and professions (especially the legal profession). This includes issues such as the concept of professionalism, the sociography and demography of lawyers; and the organisation and regulation of legal work.

The fifth component, Legal Ethics and Professional Responsibility, provides an introduction to the major issues and controversies involving legal ethics and professional responsibility, such as: lawyer-client relations, confidentiahty and privilege; conflict of interest; the special obligations of advocates to the court; the disciplinary system and complaints against lawyers; and over-riding social, ethical and systematic duties.

LAWS 1002 Contracts
8 credit points
Offered: February. Classes: two 2 hr seminars per week.
Assessment: Combination of assignment/s, essay/s and open book exam.

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 this unit are composite in nature. The central aim is to provide an understanding of the basic principles of the common law and statutes applicable to contracts. A second aim is to provide students an opportunity to critically evaluate and make normative judgements 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
Assoc Prof Findlay
Offered: July. Classes: two 2 hr seminars per week. **Assessment:** A court report, a research paper and an exam.

This unit of study is designed to assist students in developing the following understandings:

(1) A critical understanding 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 understanding of how 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 1008 Legal Research
0 credit points
Mr Coss
Offered: February, July. Classes: 1 hr per week over 11 weeks.
This unit is a compulsory component of the Bachelor of Laws degree.

Combined Law students undertake tuition at the Law school in their second year, in either first or second semester, depending on timetabling. In Semester 1, the 'host' substantive law unit will be Contracts; in Semester 2, the 'host' will be Criminal Law.

Graduate Law students undertake tuition in first semester of the first year. The 'host' substantive law unit will be Criminal Law.

The unit 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.

BSc/LLB
Summary Table
Units of study
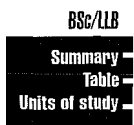
Legal Research is graded on a Pass/Fail basis. Attendance at all classes is mandatory. Numbers will be limited to a maximum of 15 in each class. There will be continuous assessment throughout the semester. Also the 'host' substantive law unit will require students to complete a research assignment, and this will obviously be marked partly with research skills in mind.

LAWS 1009   Legal Writing
0 credit points
Offered: February. Classes: 1 hr per week.
You are required to satisfactorily complete Legal Writing. This unit requires attendance at legal writing seminars which are taught in conjunction with a host unit (normally Criminal Law or Contracts). Class times will be made available early in the semester. The seminar will address common issues in legal writing at this level. Writing strategies will be developed in the context of preparing for the written assessment task in the host subject.

Legal Writing is graded on a Pass/Fail basis. Attendance at all classes is mandatory.

LAWS 3000   Federal Constitutional Law
10 credit points
Associate Professor Allars
Offered: February. Classes: two 2 hr seminars per week.
Assessment: Combination drawn from class participation, a 2000 word assignment, a 3000 word essay and an open book exam.
The central aim of the unit of study is to provide an understanding of constitutional arrangements at state and federal levels. At the state level the unit includes study of the Constitution Act 1902 (NSW); parliamentary sovereignty and legislative power; manner and form provisions; territoriality; separation of powers; and the Australia Acts 1986. At the federal level topics covered are federation; characterisation of laws; severance; judicial review and interpretation; selected federal heads of legislative power (eg trade and commerce power, corporations power, external affairs power, taxation and financial arrangements); federal/state relations (inconsistency of laws; legislating with respect to the Crown, intergovernmental immunities); prohibitions upon legislative power (implied freedoms, freedom of inter-state trade, excise power); separation of powers and judicial power of the Commonwealth.

Students are required to evaluate the legal principles critically, with reference to underlying political theory.

LAWS 3001   Torts
10 credit points
Dr Ball
Offered: July. **Classes:** two 2 hr seminars per week. **Assessment:** Combination drawn from class participation, assignment/s and open book exam.
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 will be drawn from amongst the following:

(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.

Combined Arts/Science degrees

BA/BSc Resolutions of the Faculty
See Chapter 7.

BSc/BA Resolutions
See Chapter 7.

Combined Science/Engineering degrees

BSc/BE Resolutions
See Chapter 7.

BE/BSc Resolutions
See Chapter 7.

Progression into the Faculty of Engineering
Graduands/graduates in the Faculty of Science at this University, who wish to transfer to the Bachelor of Engineering degree course, must make application through the Universities Admissions Centre by the appropriate closing date in the year prior to proposed entry into the Faculty of Engineering.

Applications will be considered on the basis of academic merit. Consideration will be given to HSC examination results and examination results in the Faculty of Science (and to results in any other tertiary units of study completed). The offer of a place in the Faculty of Engineering is NOT automatic and the competition for entry is keen.

Graduands/graduates in the Faculty of Science who are offered a place in the Faculty of Engineering may be able to complete the BE degree requirements in two further years of full-time study. It would be necessary to have completed appropriate units of study in the Faculty of Science so that credit for/exemption from all or most of the Junior and Intermediate core unit of study prescribed for that branch of Engineering in which candidates wish to proceed could be given. The BSc degree requirements would need to have been completed in the minimum time and in some Engineering Departments minimum standards of performance in Science units of study are required. Prospective candidates are advised to consult the relevant Engineering Department about the Science units of study required and the standards of performance necessary.

Combined Science/Medicine degrees

BSc/MB BS Resolutions of the Faculty
This course is no longer available for new enrolments. The relevant Resolutions of the Faculty can be consulted in the *Faculty of Science Handbook, 1997.*

Combined Science/Commerce degree

Resolutions
See Chapter 7.

Degree of 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 Faculties of Arts and Science jointly administer the degree. To qualify for the Bachelor of Liberal Studies students will complete 192 credit points over a minimum of four years. These 192 credit points will include:

- at least 120 credit points from units of study at the Senior and Intermediate levels.
- at least one major in each of Arts and Science.
- at least 28 credit points (16 of which must be from Intermediate or Senior level units of study) from subject areas in one language other than English.
- a six credit point unit of study in communication and analytical skills or in other academic skills as prescribed (currently, ENGL 1050 Language in Context).
- a minimum of six credit points from units of study in Mathematics or Statistics.

An Arts major generally consists of 32 Senior credit points from Part A of the Table of units of study as described in the regulations for the Bachelor of Arts degree. A Science major consists of a minimum of 8 Intermediate and 24 Senior credit points from a single Science Subject Area.

Units of study available in the Bachelor of Liberal Studies are selected from those available in the Bachelor of Arts and those available in the Bachelor of Science. In addition, up to 28 credit points from units of study offered by the Faculties of Architecture, Economics and Education and the Boards of Study in Music and Social Work, the Sydney College of the Arts and the Conservatorium of Music may be counted towards the degree.

Resolutions of the Senate
See Chapter 7.

Bachelor of Liberal Studies

ENGL 1050 Language in Context: Image, Speech, Writing
6 credit points
Dr Williams (Coordinator)
Offered: July. **Classes:** Two 1 hour lectures and one 1 hour tutorial.
Assessment: Two short class exercises, one essay, end of semester exam.
The unit provides an introduction to the systematic study of English language for a variety of practical, interpretive purposes. Major topics include relations between different varieties of English, the study of grammatical structures from a meaning perspective, speech and writing variation, relationships between visual images and language, and the relevance of historical changes to the English language to contemporary practice. The major concepts introduced in this unit will enable students to analyse texts systematically, and to critique the significance of linguistic variation.
Textbooks
A resource book will be available.

Combined degrees
BLibStud

Summary

Units of study
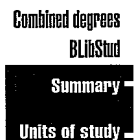
Degree of Bachelor of Computer Science and Technology (BCST)

The Bachelor of Computer Science and Technology degree includes substantial coverage of Computer Science and related subjects, to prepare you for a professional career in Information Technology; however it is also very flexible, and you have a wide choice of electives as well, depending on your interests. In particular, you can enrol in any unit of study offered in the BSc, BA, or BEc degrees. The BCST degree takes three years full-time, or four years to obtain Honours.

Summary of requirements

General requirements

The requirements for the degree are set out in the Senate Resolutions, which should be read by all intending candidates (see below). In particular it is important to ensure that any proposed course of study will comply with the basic requirements for the degree contained in sections 4, 5, 6, and 9 of the Resolutions (see Chapter 7).

Overview of degree structure

A full-time student usually takes units of study worth 24 credit points each semester; however you may choose to do a few more or less at various times during your course. Graduation requires 144 credit points.

In first year, students take units of study in the two core subject areas: Computer Science (take either COMP 1001 or 1901 in first semester, and either COMP 1002 or 1902 in second semester; these cover programming in an object-oriented language, and an introduction to central ideas of the field including data structures, computer organisation, and reasoning about code) and Mathematics (take two of MATH 1001 or 1002 or 1011 or 1901 or 1902 in February semester, and two more Mathematics units of study including either MATH 1004 or 1904 in July semester; these cover Discrete Mathematics and some other topics such as either Calculus or Statistics). You must also choose 24 credit points of elective units of study which may include more Mathematics and Computing, or other subjects chosen from a wide selection in science, arts, business or engineering. Your elective study must include 12 credit points in a single subject area that is neither Computer Science, Information Systems nor Mathematics.

In second year, all students must study at least 4 units in Computer Science. These would include COMP 2002 or 2902 and COMP 2004 or 2904 which cover complex data structures like trees and graphs, effective programming in the industrial-strength language including Java and C++, and use of Unix tools such as shell scripts. Other choices deal with computer organisation and assembly language programming, systems analysis, mathematical models for computer languages, databases and networks. Second year also contains some mathematics, chosen from a wide selection, and some electives, which may be additional subjects taken at introductory level or perhaps you prefer further study in the electives you began studying in first year.

In third year there is a wide choice of units covering many topics; units of study related to computing will usually occupy at least 75% of your time. Of this, at least 50% of the year must actually be spent studying units of study in Computer Science itself; another 25% should be Computer Science from Table III(ii). Students must also complete a project from those listed in Table III(i). For an Honours degree, you spend the fourth year studying a mixture of advanced topics in Computer Science, and also carry out a supervised research project.

UAI

A quota will apply for entry into the BCST degree.

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 the first two years, and the possibility of a double major, combining computer science with another computationally based discipline. Students should refer to Table HI, the Table of units of study for the BCST, and the Table of units of study for the BSc (Table I).

Below are some of the main career paths; detailed advice on relevant units of study can be found on the web site of the Computer Science department.

- Network manager, system administrator or programmer for embedded systems
- Programmer for commercial applications
- Information system consultant
- Programmer for scientific applications
- Programmer for bioinformatics
- Programmer for geographic information systems
- Computer scientist with interest in mathematics.

Special permission

You should note that the Faculty can, in certain instances, permit exceptions to the normal requirements for a degree. Applications for special permission should be made in writing to the Faculty after discussion with staff in the Faculty office.

Part-time candidature

It is expected that the majority of candidates will proceed as full-time students. If, however, you are unable to proceed on a full-time basis you may enrol as a part-time candidate and will be required to indicate this when enrolling. Daytime attendance at lectures and laboratory classes is required for most science units of study.

BCST Degree Resolutions

See Chapter 7.

Degree of Bachelor of Computer Science and Technology (Advanced)

The Bachelor of Computer Science and Technology (Advanced) degree aims to provide a highly technologically relevant and attractive degree to high-quality students. It is intended to meet the demand of students who do exceptionally well in the NSW HSC (or equivalent), or those who have substantial computer programming experience and aptitude. The degree program offers top students the opportunity to study areas which they find most interesting and valuable. The degree is based on a core of Computing subjects which can be combined with other subjects from a range of Faculties (especially Engineering and Commerce subjects).

The resolutions of the Senate governing candidature for the degree of Bachelor of Computer Science and Technology also govern the Bachelor of Computer Science and Technology (Advanced) degree program. Essentially, the degree has the same structure as the BCST (144 units with a major in Computer Science; either 12 extra computer-related credits at third year or 12 senior credits in a single other Science; a minor in Mathematics and/or Statistics) but it requires that a substantial amount of this work be done in Advanced units of study in Computer Science.

The degree is composed of individual units of study, with great flexibility in the choice among those offered in Faculties of Science, Arts, Economics and from Engineering.

Table III: Bachelor of Computer Science and Technology

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
Senior Units of Study (i)				
COMP 3201	Algorithmic Systems Project	4	C) COMP 3001 or 3901. *NB: Changes to semester availability, prerequisites and corequisites subject to Faculty approval.*	*July*
COMP 3202	Computer Systems Project	4	P) COMP 3009 or 3909. C) Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204 or 3205, 3206 or 3809.	*February, July*
COMP 3203	Artificial Intelligence Project	4	C) COMP 3002 or 3902. *NB: Changes to unit name, semester availability, prerequisites and corequisites subject to Faculty approval.*	*February*
COMP 3204	Software Engineering Project	4	C) COMP 3100 or 3 800. *NB: Changes to unit of study title, description, semester availability, prerequisites and corequisites subject to Faculty approval.*	*July*
COMP 3205	Product Development Project	4	P) COMP 3008. C) Students intending to major in Computer Science are advised to enrol in one of COMP 3201, 3202, 3203, 3204 or 3205, 3206 or 3809.	*February, July*
COMP 3206	Bioinformatics Project	4	Q) COMP 2004 or 2904. P) 8 credit points of Senior Computer Science (including COMP 3008/3100/3908/3800) and 16 credit points of Intermediate Biology, Biochemistry and/or Pharmacology.	*July*
COMP 3809	Software Project (Advanced)	4	P) 16 credit points of Intermediate or Senior Computer Science, with Distinction average. C) 8 credit points of Senior Computer Science.	*February, July*
Senior Units of Study (ii)				
Consult Faculty of Economics Handbook for details of ECMT units of study:				
ECMT 3510				
ECMT 3520				
Consult Faculty of Engineering Handbook for details of ELEC units of study:				
ELEC 3501	Communications			
ELEC 3601	Digital Systems Design			
ELEC 4302	Image Processing and Computer Vision			
ELEC 4303	Digital Signal Processing			
ELEC 4501	Data Communication Networks			
ELEC 4601	Computer Design			
ELEC 4602	Real Time Computing			
ELEC 5501	Advanced Communication Networks			
ELEC 5601	Advanced Real Time Computing			
ELEC 5602	Advanced Computer Architecture			
ELEC 5603	Biologically Inspired Signal Processing			
ELEC 5604	Adaptive Pattern Recognition			

BCST
BCST(Advanced)
Summary
Table

Table III: Bachelor of Computer Science and Technology - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
ELEC 5605	Advanced Digital Engineering			
ELEC 5606	Multimedia Systems and Applications			
ELEC 5607	Hardware/Software Co-design			
GEOG 3102	Coastal Management and GIS	12	P) GEOG 2001 or 2002 or 2101 or MARS 2002.	*July*
ISYS 3000	Management of Information Systems	4	Q) INFO 2000 or COMP 2000.	*July*
ISYS 3011	Information Systems Methodologies	4	Q) INFO 2000 and INFO 2005. *NB: Not offered in 2000.*	*February*
ISYS 3012	Project Management and Practice	4	Q) INFO 2000. *NB: Not offered in 2000.*	*February*
ISYS 3015	Information Systems Research Methods	4	Q) ENGL 1050 or equivalent or ARM 1000 and 24 credit points of Intermediate units of study including 8 credit points from INFO or ISYS units of study.	*February*
ISYS 3207	Information Systems Project	8	Q) ISYS 3015. P) INFO 3005 or ISYS 3000 or ISYS 3012.	*July*
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.	*February*
MATH 3007	Coding Theory	4	P) 8 credit points of Intermediate Mathematics (strongly advise MATH 2002 or 2902).	*July*
MATH 3010	Information Theory	4	P) 8 credit points of Intermediate Mathematics (strongly advise MATH 2001 or 2901 and some probability theory).	*July*
MATH 3016	Mathematical Computing I	4	P) 8 credit points of Intermediate Mathematics and one of MATH 1001 or 1003 or 1901 or 1903. N) May not be counted with MATH 3916.	*February*
MATH 3019	Signal Processing	4	P) MATH (2001 or 2901) and MATH (2005 or 2905).	*February*
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.	*July*
MATH 3905	Categories and Computer Science (Advanced)	4	P) 12 credit points of Intermediate Mathematics.	*Februaiy*
MATH 3912	Combinatorics (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 2902).	*July*
MATH 3913	Computational Algebra (Advanced)	4	P) 12 credit points of Intermediate Mathematics (strongly advise MATH 3002 or 3902).	*July*
MATH 3916	Mathematical Computing I (Advanced)	4	P) 8 units of Intermediate Mathematics and one of MATH 1903 or Credit in MATH 1003. N) May not be counted with MATH 3016	*February*
PHYS 3301	Scientific Computing	4	P) 16 credit points of Intermediate units of study in Chemistry, Computer Science, Mathematics, Physics or Statistics.	*Februaiy*
PHYS 3303	Scientific Visualisation	4	P) PHYS 3301.	*July*
STAT 3004	Design of Experiments	4	P) STAT 3002 or 3902.	*July*

Degree of Bachelor of Medical Science (BMedSc)

Summary of requirements

The Bachelor of Medical Science degree program requires three years of full-time study. An Honours program is available and requires a further year of full-time study. Progression towards the degree is by accumulation of credit points gained by completing units of study. A total of 144 credit points is required for the degree. This must include:

- 48 credit points from Junior units of study, comprising 12 credit points each from Biology, Chemistry, Mathematics and Physics; with the permission of the Faculty 12 credit points of Biology may be replaced with Junior units of study in Computer Science or Psychology;
- 48 credit points from Intermediate units of study, comprising a core of 40 credit points plus 8 credit points of electives;
- 48 credit points from Senior units of study, comprising a core of 12 credit points plus 36 credit points of electives.

Students are required to pass all components of the core units of study in order to progress in the degree. It is possible for students to 'carry' their 8 credit point elective from the Intermediate year into the Senior year, provided that it is not a prerequisite for an elective they may wish to undertake in the Senior Year. In choosing Intermediate Biochemistry units of study, students should note that the units of study BCHM 2101 and 2102 have no laboratory components. Students selecting these units of study must choose another 8 credit points from Biology or History and Philosophy of Science units of study. Please note that students can choose BCHM 2001 or 2901 *and* BCHM 2002 or 2902 which replaces the combination of BCHM 2101 and 2102 as well as the necessity to complete further Intermediate electives.

The combination MATH 1003 and 1004 or 1903 and 1904 is not recommended in tins degree. Students wishing to study Statistics/Calculus are advised to select from MATH 1003, 1005,1903,1905, 1013,1015.

Note: New Resolutions will be in force for students enrolling in first year of the BMedSc from 2000. "While the new resolutions will not affect the first year of the course, substantial changes to second and third years will be introduced from 2001 and 2002 respectively and further details will be given to students at enrolment. Students enrolled in first year prior to 2000 and students enrolling in second year in 2000 will continue to be governed by the pre-2000 Resolutions.

UAI

A quota will apply for entry into the BMedSc degree in first year.

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.

Transferring to other degrees offered by the Faculty of Science

Students who wish to discontinue enrolment in the BMedSc course may apply for admission to other degrees offered by the Faculty through the Universities Admission Centre. For admission to the BSc (Advanced) and BSc (Molecular Biology and Genetics) students must achieve a WAM of at least 75 and meet the appropriate Departmental unit of study entrance requirements. Students who wish to transfer to the BSc degree after completing the Intermediate year should be aware that in the BSc degree a student is permitted to complete only 40 credit points from subjects taught by Departments in the Faculty of Medicine (Anatomy and Histology, Immunology, Pharmacology, Physiology, and Cell Pathology). Such students may find it necessary to complete additional Intermediate units of study in the Faculty of Science before undertaking Senior units of study.

BMedSc Degree Resolutions

See Chapter 7.   .

Table IV: Bachelor of Medical Science

(a)	(b)	(c)	(d)/fe)	(f)
		Credit	A) Assumed Knowledge Q) Qualifying P) Prerequisite	
Unit of Study		Points	C) Corequisite N) Prohibition	Offered

A. Junior Units of Study

Biology

BIOL 1001	Concepts in Biology	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1901	*February*
BIOL 1002	Living Systems	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1902	*July*
BIOL 1003	Human Biology	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1903	*July*
BIOL 1901	Concepts in Biology (Advanced)	6	A) HSC 2-unit Biology course. P) UAI of at least 93 and at least 80% in HSC 2-unit Biology or equivalent, or by invitation, or a UAI of at least 95 (if no University level biology units have been taken), or Distinction or better for BIOL 1002, 1003, 1902 or 1903. N) May not be counted with BIOL 1001 *NB: Changes to prerequisites subject to Facility approval.*	*February*
BIOL 1902	Living Systems (Advanced)	6	A) HSC 2-unit Biology course. P) UAI of at least 93 and at least 80% in HSC 2-unit Biology or equivalent, or by invitation, or a UAI of at least 95 (if no University level biology units have been taken), or a Distinction or better in BIOL 1001 or 1901. N) May not be counted with BIOL 1002 *NB: Changes to prerequisites subject to Faculty approval.*	*July*
BIOL 1903	Human Biology (Advanced)	6	A) HSC 2-unit Biology course. P) UAI of at least 93 and at least 80% in HSC 2-unit Biology or equivalent, or by invitation, or a UAI of at least 95 (if no University level biology units have been taken), or a Distinction or better in BIOL 1001 or BIOL 1901. N) May not be counted with BIOL 1003 *NB: Changes to prerequisites subject to Faculty approval.*	*July*

Chemistry

CHEM 1101	Chemistry 1A	6	A) HSC Mathematics 2 unit course; and the Chemistry component of the 4-unit or 3-unit HSC Science course, or 2-unit Chemistry. C) Recommended concurrent unit of study: Preferred — MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. N) May not be counted with CHEM 1001 or 1901 or 1903.	*February, July*
CHEM **1102**	Chemistry IB	6	Q) CHEM 1101 or a Distinction in CHEM 1001 or equivalent. C) Recommended concurrent unit of study: Preferred — MATH1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904; otherwise - MATH 1004 and 1005 or 1013 and 1015. N) May not be counted with CHEM 1002 or 1902 or 1904.	*February, July*
CHEM 1901	Chemistry 1A (Advanced)	6	P) UAI of at least 92.5 and at least 75% in HSC 2-unit Chemistry or equivalent; by invitation. C) Recommended concurrent unit of study: Preferred — MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. N) May not be counted with CHEM 1001 or 1101 or 1903.	*February*
CHEM 1902	Chemistry IB (Advanced)	6	Q) CHEM 1901 or 1903 or Distinction in CHEM 1101 or equivalent; by invitation. C) Recommended concurrent unit of study: Preferred — MATH 1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904, otherwise — MATH 1013 and 1015 or 1004 and 1005. N) May not be counted with CHEM 1002 or 1102 or 1904.	*July*
CHEM 1903	Chemistry 1A (Special Studies Program)	6	P) UAI of at least 98.7 and at least 85% in HSC 2-unit Chemistry or equivalent. Entry is by invitation. C) Recommended concurrent unit of study: Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise - MATH 1011 and 1012. Students in the Faculty of Science Talented Students Program are automatically eligible. For the purpose of Resolution 11 this unit of study is deemed to be designated as an Advanced unit of study. N) May not be counted with CHEM 1001 or 1101 or 1901.	*Februaiy*
CHEM 1904	Chemistry IB (Special Studies Program)	6	P) Distinction in CHEM 1903; by invitation. C) Recommended concurrent unit of study: Preferred — MATH 1003 and 1005 or 1003 and 1004 or 1903 and 1905 or 1903 and 1904; otherwise — MATH 1013 and 1015 or 1004 and 1005. N) May not be counted with CHEM 1002 or 1102 or 1902.	*July*

Table IV: Bachelor of Medical Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(0 Offered
CHEM 1908	Chemistry 1 Life Sciences A (Advanced)	6	P) UAI of at least 92.5 and at least 75% in HSC 2-unit Chemistry or equivalent; by invitation. C) (Recommended concurrent unit of study) Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise MATH 1011 and 1012. N) May not be counted with CHEM 1002 or 1102 or 1902 or 1904 or 1907	*February*
CHEM 1909	Chemistry 1 Life Sciences B Molecular (Advanced)	6	P) CHEM 1907 or 1908 or equivalent. N) May not be counted with CHEM 1101 or 1101 or 1901 or 1903	*July*
Computer Science				
COMP 1001	Introductory Programming	6	A) HSC 3-unit Mathematics. C) Students intending to major in Computer Science are advised to enrol in MATH 1003 and 1004 or 1004 and 1005 or 1903 and 1904 or 1904 and 1905 in their first year. N) May not be counted with COMP 1901.	*February, July*
COMP 1002	Introductory Computer Science	6	P) COMP 1001 or 1901. N) May not be counted with COMP 1902	*February, July*
COMP 1901	Introductory Programming (Advanced)	6	A) HSC 3-unit Mathematics (Requires permission by the Head of Department). N) May not be counted with COMP 1001	*February, July*
COMP 1902	Introductory Computer Science (Advanced)	6	P) Distinction in COMP 1901 or 1001. N) May not be counted with COMP 1002	*February, July*
Mathematics				
MATH 1001	Differential Calculus	3	A) HSC 3-unit Mathematics. N) May not be counted with MATH 1901 or 1011	*February*
MATH 1002	Linear Algebra	3	A) HSC 3-unit Mathematics. N) May not be counted with MATH 1902 or 1012	*February*
MATH 1003	Integral Calculus and Modelling	3	A) HSC 4-unit Mathematics or MATH 1001. N) May not be counted with MATH 1903 or 1013	*July*
MATH 1004	Discrete Mathematics	3	A) HSC 3-unit Mathematics. N) May not be counted with MATH 1904	*July*
MATH 1005	Statistics	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1905 or 1015	*July*
MATH 1011	Life Sciences Calculus	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1901 or 1001. May not be counted by students enrolled in the BSc/BCom combined award course.	*February*
MATH 1012	Life Sciences Algebra	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1002 or 1902. May not be counted by students enrolled in the BSc/BCom combined award course.	*July*
MATH 1013	Life Sciences Difference and Differential Equations	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1003 or 1903. May not be counted by students enrolled in the BSc/BCom combined award course.	*July*
MATH 1015	Life Sciences Statistics	3	A) HSC 2-unit Mathematics. N) May not be counted with MATH 1905 or 1005. May not be counted by students enrolled in the BSc/BCom combined award course.	*February*
MATH 1901	Differential Calculus (Advanced)	3	A) HSC 4-unit Mathematics or top decile 3-unit Mathematics. N) May not be counted with MATH 1001 or 1011	*February*
MATH 1902	Linear Algebra (Advanced)	3	A) HSC 4-unit Mathematics or top decile 3-unit Mathematics. N) May not be counted with MATH 1002 or 1012	*February*
MATH 1903	Integral Calculus and Modelling (Advanced)	3	A) HSC 4-unit Mathematics or Credit in (MATH 1901 or MATH 1001). N) May not be counted with MATH 1003 or 1013	*July*
MATH 1904	Discrete Mathematics (Advanced)	3	A) HSC 4-unit Mathematics or top decile 3-unit Mathematics. N) May not be counted with MATH 1004	*July*
MATH 1905	Statistics (Advanced)	3	A) HSC 3-unit Mathematics (50 percentile). N) May not be counted with MATH 1005 or 1015	*July*

BMedSc

Table

Table IV: Bachelor of Medical Science - continued

(a) Unit of Study	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
Physics			
PHYS 1001 Physics (Regular)	6	A) HSC Physics or HSC 4-unit Science. C) Recommended concurrent units of study: MATH 1001 and 1002 or 1901 and 1902. N) May not be counted with PHYS 1002 or 1901.	*February*
PHYS 1002 Physics (Fundamentals)	6	A) No assumed knowledge of Physics. C) Recommended concurrent unit of study: MATH 1001 and 1002 or 1901 and 1902. N) May not be counted with PHYS 1001 or 1901.	*February*
PHYS 1003 Physics (Technological)	6	A) HSC 2-unit Physics or HSC 4-unit Science or PHYS 1001 or 1002 or 1901 or equivalent. C) Recommended concurrent unit of study: MATH 1003 and 1005 or 1903 and 1905. N) May not be counted with PHYS 1004 or 1902.	*February, July*
PHYS 1004 Physics (Environmental and L_{ife} Sciences)	6	A) HSC 2-unit Physics or HSC 4-unit Science or PHYS 1001 or 1002 or 1901 or equivalent. C) Recommended concurrent unit of study: MATH 1003 and 1005 or 1903 and 1905. N) May not be counted with PHYS 1003 or 1902.	*July*
PHYS 1901 Physics (Advanced) A	6	P) UAI at least that for acceptance into BSc (Advanced) program or at least 90 in HSC 2-unit Physics or a least 180 in HSC 4-unit Science or Distinction or better in PHYS 1003. C) Recommended concurrent unit of study: MATH 1001 and 1002 or 1901 and 1902. N) May not be counted with PHYS 1001 or 1002.	*February*
PHYS 1902 Physics (Advanced) B	6	P) UAI at least that for acceptance into BSc(Advanced) program, or at least 90 in HSC 2-unit Physics or at least 180 in HSC 4-unit Science or PHYS 1901 or Distinction or better in PHYS 1001. C) Recommended concurrent unit of study: MATH 1003 and 1005 or 1903 and 1905. N) May not be counted with PHYS 1003 or 1004.	*July*
Psychology			
PSYC 1001 Psychology 1001	6		*February*
PSYC 1002 Psychology 1002	6		*July*

B. Intermediate Units of Study

Core Units of Study

BMED 2101 Human Life Sciences A	12	Q) 12 credit points of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology.	*February*
BMED 2102 Human Life Sciences B	12	P) BMED 2101.	*July*
BCHM 2101 Genes and Proteins Theory	4	Q) 6 credit points of Junior Chemistry which must include one of CHEM 1101, 1102, 1901, 1902, 1903, 1904 or, with the permission of the Head of Department, exceptional performance in CHEM 1001 or 1002. N) May not be counted with AGCH 2001 or BCHM 2001 or 2901	*February*
BCHM 2102 Molecules, Metabolism and Cells Theory	4	Q) BCHM 2001, 2101 or 2901. N) May not be counted with AGCH 2001 or BCHM 2002 or 2902	*July*
PCOL 2001 Pharmacology Fundamentals	4	P) 6 credit points of Junior Chemistry (including CHEM 1101, 1901 or 1903), 6 credit points of Junior Biology, and 6 credit points of units of study from other Science Discipline Areas. *NB: This is a qualifying unit of study for PCOL 3001 or 3002.*	*February*
PCOL 2002 Pharmacology - Drugs and People	4	P) 6 credit points of Junior Chemistry (including CHEM 1101, 1901 or 1903), 6 credit points of Junior Biology, and 6 credit points of units of study from other Science Discipline Areas. Students are strongly advised to complete PCOL 2001 before enrolling in PCOL 2002.	*July*

Table IV: Bachelor of Medical Science - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered

Elective Units of Study (Select one subject)

Biochemistry

BCHM 2001	Genes and Proteins	8	Q) 6 credit points of Junior Chemistry which must include one of CHEM 1101, 1102, 1901, 1902, 1903, 1904 or, with the permission of the Head of Department, exceptional performance in CHEM 1001 or 1002. N) May not be counted with AGCH 2001 or BCHM 2101 or 2901	*February*
BCHM 2002	Molecules, Metabolism and Cells	8	Q) BCHM 2001 or 2901. N) May not be counted with AGCH 2001 or BCHM 2102 or 2902	*July*
BCHM 2901	Genes and Proteins (Advanced)	8	Q) 6 credit points of Junior Chemistry which must include one of CHEM 1101, 1102, 1901, 1902, 1903, 1904 or, with the permission of the Head of Department, exceptional performance in CHEM 1001 or 1002 (selected students). N) May not be counted with AGCH 2001 or BCHM 2001 or 2101	*February*
BCHM 2902	Molecules, Metabolism and Cells (Advanced)	8	Q) BCHM 2001 or 2901 (selected students). N) May not be counted with AGCH 2001 or BCHM 2002 or 2102	*July*

Biology

| BIOL 2005 | Molecular and General Genetics | 8 | QJBIOL 1001 or 1901 and one of BIOL 1002,1902,1003,1903. P) CHEM 1102 or 1902 or 1904 or 1909 . BCHM 2001 or 2901 and BIOL 2006 or 2906 are highly recommended. N) May not be counted with BIOL 2105 or 2905. *NB: Students taking this unit concurrently with (or following completion of) BIOL 2002 or 2902 or 2003 or 2903 must complete 32 hours of alternative work in the unit other than BIOL 2005, in place of the core material common to both units. Students enrolling in BIOL 2005 after having completed BIOL 2002 or 2902 or 2003 or 2903 will be required to complete 32 hours of alternative work in BIOL 2005. Changes to prerequisistes subject to Faculty approval.* | *July* |
| BIOL 2905 | Molecular and General Genetics (Advanced) | 8 | Q) Distinction average in BIOL 1001 or 1901 and one of BIOL 1002, 1902, 1003, 1903. These requirements may be varied and students with lower averages should consult the Unit Executive Officer. P) CHEM 1102 or 1902 or 1904 or 1909. BCHM 2001 or 2901 and BIOL 2006 or 2906 are highly recommended. N) May not be counted with BIOL 2005 or 2105. *NB: Students taking this unit concurrently with (or following completion of) BIOL 2002 or 2902 or 2003 or 2903 must complete 32 hours of alternative work in the unit other than BIOL 2005, in place of the core material common to both units. Students enrolling in BIOL 2005 after having completed BIOL 2002 or 2902 or 2003 or 2903 will be required to complete 32 hours of alternative work in BIOL 2005. Changes to prerequisites subject to Faculty approval.* | *July* |

History and Philosophy of Science

| HPSC 2001 | What is this thing called Science? | 4 | P) 24 credit points of Junior units of study. This is a qualifying unit of study for Senior History and Philosophy of Science units of study. | *July* |
| HPSC 2002 | The Birth of Modern Science | 4 | P) 24 credit points of Junior units of study. This is a qualifying unit of study for Senior History and Philosophy of Science units of study. | *February* |

C. Senior Units of Study

Senior Core units of Study - February semester

| BMED 3001 | Human Life Sciences | 4 | Q) BMED 2101 and 2102. P) PCOL 2001 and 2002, and BCHM (2001 or 2101 or 2901) and BCHM (2002 or 2102 or 2902). | *February* |
| BMED 3002 | Microbiology and Immunology | 8 | Q) BMED 2101 and 2102. P) PCOL 2001 and 2002, and BCHM (2001 or 2101 or 2901) and BCHM 2002 or 2102 or 2902). | *February* |

Elective Units of Study - February semester

Anatomy and Histology

| ANAT 3001 | Microscopy and Histochemistry | 12 | Q) ANAT 2001. | *February* |

Biochemistry

| BCHM 3001 | Molecular Biology and Structural Biochemistry | 12 | Q) BCHM 2002 or 2902, or with permission of Head of Department, BIOL 2005 or 2905 or excellent performance in BCHM 2001 or 2901 with a suitable Intermediate CHEM unit of study. N) May not be counted with BCHM 3901 | *Februaiy* |

Table IV: Bachelor of Medical Science - continued

(a) (b) Unit of Study	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	Offered
BCHM 3901 Molecular Biology and Structural Biochemistry (Advanced)	12	Q) BCHM 2002 or 2902 or, with permission of Head of Department, BIOL 2005 or 2901, or excellent performance in BCHM 2001 or 2901 with suitable Intermediate Chemistry (selected students). N) May not be counted with BCHM 3001	*February*

Biology

BIOL 3103 Molecular Genetics and Recombinant DNA Technology	12	Q) 16 credit points of Intermediate Biology including BIOL 2005 or 2905 (For BMedSc students BIOL 2005 or 2905). N) May not be counted with BIOL 3903	*February*
BIOL 3903 Molecular Genetics and Recombinant DNA Technology (Advanced)	12	Q) Distinction average in 16 credit points of Intermediate Biology including BIOL 2005 or 2905. (For BMedSc students: Distinction in BIOL 2005 or 2905.) These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N) May not be counted with BIOL 3103	*February*

Cell Pathology

CPAT 3001 Cell Pathology A	12	P) ANAT 2002 or BCHM 2002 or 2902, or BIOL 2005 or 2006 or 2905 or 2906, or both PCOL 2001 and 2002, or PHSI 2002 (For BMedSc, BMED 2101 and 2102). *NB: Students must contact the Department before enrolling. Only a small number of students can be accommodated in the laboratory facilities.*	*February*

History and Philosophy of Science

HPSC 3102 History of the Biomedical Sciences	12	Q) HPSC 2001 and 2002.	*February*

Pharmacology

PCOL 3001 Molecular Pharmacology and Toxicology	12	P) PCOL 2001 and 2002. Students are strongly advised to consider Intermediate units of study in Biochemistry and/or Chemistry together with PHSI 2001 and 2002 if they wish to undertake PCOL 3001.	*February*
PCOL 3901 Molecular Pharmacology and Toxicology (Advanced)	12	P) PCOL 2001 and 2002. Students are strongly advised to consider Intermediate units of study in Biochemistry and/or Chemistry together with PHSI 2001 and 2002 if they wish to undertake PCOL 3801. N) May not be counted with PCOL 3001.	*Februaiy*

Physiology

PHSI 3001 Neuroscience	12	Q) PHSI 2101 or PHSI 2001 or ANAT 2003 or BMED 2101 and 2102. P) BCHM (2001 or 2101 or 2901) and (2002 or 2102 or 2901) plus 8 or more credit points from any Intermediate units of study in Anatomy and Histology, Biology, Chemistry, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology or Statistics. Students in the Faculty of Engineering who have completed Physiology 2001 and 2002 plus at least one other Intermediate unit of study similar to the prerequisites may also be permitted to enrol. *NB: A minimum of 8 credit points of Intermediate Physiology is recommended.*	*February*
PHSI 3901 Neuroscience (Advanced)	12	Q) PHSI 2101 or PHSI 2001 or ANAT 2003 or BMED 2101 and 2102. P) BCHM (2001 or 2101 or 2901) and (2002 or 2102 or 2901) plus 8 or more credit points from any Intermediate units of study in Anatomy and Histology, Biology, Chemistry, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology or Statistics. *NB: A minimum of 8 credit points of Intermediate Physiology is recommended. Available to selected students only.*	*Februaiy*

Elective Units of Study – July semester

BMED 3003 Immunology	12	Q) BMED 2101 and 2102. P) PCOL 2001 and 2002, and BCHM (2001 or 2101 or 2901) BCHM (2002 or 2102 or 2902).	*July*
BMED 3004 Infectious Diseases	12	Q) BMED 2101 and 2102. P) PCOL 2001 and 2002, and BCHM (2001 or 2101 or 2901) or (2002 or 2102 or 2902). C) CoreqMICR3003.	*July*

Anatomy and Histology

ANAT 3002 Cells and Development	12	A) (i) an understanding of the basic structure of the vertebrates; (ii) an understanding of elementary biochemistry and genetics. Q) ANAT 2001. P) At least 8 credit points of Intermediate Biochemistry. N) May not be counted with ANAT 3003	*July*

Table IV: Bachelor of Medical Science - continued

(a) Unit of Study		(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
ANAT 3005	Topographical Anatomy	12	QJBMED 2101 and 2102.	*July*
Biochemistry				
BCHM 3002	Metabolic and Medical Biochemistry	12	Q) BCHM 2002 or 2902. N) May not be counted with BCHM 3902	*July*
BCHM 3902	Metabolic and Medical Biochemistry (Advanced)	12	Q) BCHM 2002 or 2902 (selected students). N) May not be counted with BCHM 3002	*July*
Biology				
BIOL 3203	Eukaryotic Genetics and Development	12	Q) 16 credit points of Intermediate Biology including BIOL 2005 or 2905 (For BMedSc students BIOL 2005 or 2905). N) May not be counted with BIOL 3904 or 3905	*July*
BIOL 3904	Eukaryotic Genetics and Development (Advanced)	12	Q) Distinction average in 16 credit points of Intermediate Biology including BIOL 2005 or 2905. (For BMedSc students: Distinction in BIOL 2005 or 2905) These requirements may be varied and students with lower averages should consult the Unit Executive Officer. N) May not be counted with BIOL 3203 or 3905	*July*
Cell Pathology				
CPAT 3101	Pathological Basis of Human Disease	12	Q) ANAT 2001; or BCHM 2001 or 2002 or 2101 or 2102 or 2901 or 2902; or BIOL 2001 or 2002 or 2005 or 2006 or 2101 or 2102 or 2105 or 2106 or 2901 or 2902 or 2905 or 2906; or HPSC 2001 or 2002; or MICR 2001 or 2003 or 2901; or PCOL 2001; or PHSI 2001 (For BMedSc: BMED2101 and2102).	*July*
Microbiology				
MICR 3003	Molecular Biology of Pathogens	12	Q) BMED 3002. N) May not be counted with MICR 3903	*July*
MICR 3903	Molecular Biology of Pathogens (Advanced)	12	Q) Credit or better in BMED 3002. N) May not be counted with MICR 3003	*July*
Pharmacology				
PCOL 3002	Neuio- and Cardiovascular Pharmacology	12	P) PCOL 2001 and 2002. Students are strongly advised to consider Intermediate units of study in Biochemistry and/or Chemistry together with PHSI 2001 and 2002 if they wish to undertake PCOL 3002.	*July*
PCOL 3902	Neuro- and Cardiovascular Pharmacology (Advanced)	12	P) PCOL 2001 and 2002. Students are strongly advised to consider Intermediate units of study in Biochemistry and/or Chemistry together with PHSI 2001 and 2002 if they wish to undertake PCOL 3902. N) May not be counted with PCOL 3002.	*July*
Physiology				
PHSI 3002	Neuroscience - Cellular and Integrative	12	P) BCHM (2001 and 2002) or (2101 and 2102) and an additional 8 or more credit points from any Intermediate unit/s of study in the following subjects: Anatomy and Histology, Biology, Chemistry, Computer Science, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology, or Statistics. Students in the Faculty of Engineering who have completed Physiology 2001 and 2002 plus at least one other Intermediate unit of study similar to the prerequisites may also be permitted to enrol.	*July*
PHSI 3003	Heart and Circulation	12	Q) PHSI 2102 or 2002 or BMED 2101 and 2102. P) BCHM (2001 or 2101 or 2901) and (2002 or 2102 or 2902) plus 8 or more credit points from any Intermediate units of study in Anatomy and Histology, Biology, Chemistry, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology or Statistics. Students in the Faculty of Engineering who have completed Physiology 2001 and 2002 plus at least one other Intermediate unit of study similar to the prerequisites may also be permitted to enrol. *NB: A minimum of 8 credit points oj'Intermediate Physiology is recommended.*	*July*
PHSI 3902	Neuroscience - Cellular and Integrative (Advanced)	12	P) PHSI 3001. *NB: Available to selected students.*	*July*
PHSI 3903	Heart and Circulation (Advanced)	12	Q) PHSI 2102 or 2002 or BMED 2101 and 2102. P) BCHM (2001 or 2101 or 2901) and (2002 or 2102 or 2902) plus 8 or more credit points from any Intermediate units of study in Anatomy and Histology, Biology, Chemistry, Mathematics, Microbiology, Pharmacology, Physics, Physiology, Psychology or Statistics. *NB: A minimum of 8 credit points of Intermediate Physiology is recommended.* *Available to selected students.*	*Februaiy*

BMedSc

Table

Bachelor of Medical Science
Bachelor of Medical Science Junior units of study

The following units of study are as prescribed by the Senate resolutions in force from 1997.

All qualifying, pre- 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 for the BSc.

- BIOL 1001 Concepts in Biology, 6 credit points
- BIOL 1002 Living Systems, 6 credit points
- BIOL 1003 Human Biology, 6 credit points
- BIOL 1901 Concepts in Biology (Advanced), 6 credit points
- BIOL 1902 Living Systems (Advanced), 6 credit points
- BIOL 1903 Human Biology (Advanced), 6 credit points
- CHEM 1101 Chemistry IA, 6 credit points
- CHEM 1102 Chemistry IB, 6 credit points
- CHEM 1901 Chemistry IA (Advanced), 6 credit points
- CHEM 1902 Chemistry IB (Advanced), 6 credit points
- CHEM 1903 Chemistry IA (Special Studies Program), 6 credit points
- CHEM 1904 Chemistry IB (Special Studies Program), 6 credit points
- CHEM 1908 Chemistry 1 Life Sciences A (Advanced), 6 credit points (preferred option)
- CHEM 1909 Chemistry 1 Life Sciences B Molecular (Advanced), 6 credit points (preferred option)
- COMP 1001 Introductory Programming, 6 credit points
- COMP 1002 Introductory Computer Science, 6 credit points
- COMP 1901 Introductory Programming (Advanced), 6 credit points
- COMP 1902 Introductory Computer Science (Advanced), 6 credit points
- MATH 1001 Differential Calculus, 3 credit points
- MATH 1002 Linear Algebra, 3 credit points
- MATH 1003 Integral Calculus and Modelling, 3 credit points
- MATH 1004 Discrete Mathematics, 3 credit points
- MATH 1005 Statistics, 3 credit points
- MATH 1011 Life Sciences Calculus, 3 credit points
- MATH 1012 Life Sciences Algebra, 3 credit points
- MATH 1013 Life Sciences Difference and Differential Equations, 3 credit points
- MATH 1015 Life Sciences Statistics, 3 credit points
- MATH 1901 Differential Calculus (Advanced), 3 credit points
- MATH 1902 Linear Algebra (Advanced), 3 credit points
- MATH 1903 Integral Calculus and Modelling (Advanced), 3 credit points
- MATH 1904 Discrete Mathematics (Advanced), 3 credit points
- MATH 1905 Statistics (Advanced), 3 credit points
- PHYS 1001 Physics (Regular), 6 credit points
- PHYS 1002 Physics (Fundamentals), 6 credit points
- PHYS 1003 Physics (Technological), 6 credit points
- PHYS 1004 Physics (Environmental and Life Sciences), 6 credit points
- PHYS 1901 Physics (Advanced) A, 6 credit points
- PHYS 1902 Physics (Advanced) B, 6 credit points
- PSYC 1001 Psychology 1001, 6 credit points
- PSYC 1002 Psychology 1002, 6 credit points

CHEM 1908 Chemistry 1 Life Sciences A (Advanced)
6 credit points
Prerequisite: UAI of at least 92.5 and at least 75% in HSC 2-unit Chemistry or equivalent; by invitation. **Corequisite:** (Recommended concurrent unit of study) Preferred - MATH 1001 and 1002 or 1901 and 1902; otherwise MATH 1011 and 1012. **Prohibition:** May not be counted with CHEM 1002 or 1102 or 1902 or 1904 or 1907. **Offered:** February. **Classes:** Total of 6hrs per week consisting on average of 3 lectures, 1 tutorial/discussion session and 2hrs of practical work. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

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/Discussions (13 hr): These will provide aspects of problem solving relevant to the theory.
Practical: Practicals (30hr) These will be designed to develop practical skills based on the theory presentaed in the lectures.
Textbooks
A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

CHEM 1909 Chemistry 1 Life Sciences B Molecular (Advanced)
6 credit points
Prerequisite: CHEM 1907 or 1908 or equivalent. **Prohibition:** May not be counted with CHEM 1101 or 1101 or 1901 or 1903. **Offered:** July. **Classes:** Total of 6hrs per week consisting on average of 2 lectures, 1 tutorial/discussion session and 3hrs of practical work. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

Lectures (26 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/Discussions (13 hr): These will provide aspects of problem solving relevant to the unit of study.
Practical: (30 hr) These will be designed to develop practical skills based on the theory presented in the lectures.
Textbooks
A booklist is contained in the booklet Information for Students distributed at enrolment. Further information can be obtained from the School.

Bachelor of Medical Science Intermediate Core units of study

Except for BMED 2101 and 2102, all qualifying, pre- 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 for the BSc.
- BMED 2101 Human Life Sciences A, 12 credit points
- BMED 2102 Human Life Sciences B, 12 credit points
  (For descriptions of the following see Department/School entry for BSc)
- PCOL 2001 Fundamentals, 4 credit points
- PCOL 2002 Drug Actions, 4 credit points
- BCHM 2101 Genes and Proteins Theory, 4 credit points
- BCHM 2102 Molecules, Metabolism and Cells Theory, 4 credit points

BMED 2101 Human Life Sciences A
12 credit points
Mrs F Janod-Groves
Qualifying: 12 credit points of Junior Mathematics, 12 credit points of Junior Chemistry, 12 credit points of Junior Physics, and 12 credit points of Junior Biology or 12 credit points of Junior Computer Science or 12 credit points of Junior Psychology. **Offered:** February. **Classes:** 5 lec, 2 tut & 5 prac/wk. **Assessment:** Written & prac exams, essays, group discussions, oral presentation and poster presentation.

This is a broadly based, integrated unit of study on the structure and function of the human body, taught by the Departments of Anatomy and Histology, Pathology and Physiology. Examples will be given, at an elementary level, of the pathology of particular tissues and organ systems. The response of the body to environmental stress will also be discussed. The following topics will be taught.

Being Alive: Introduction to basic cell types and tissues, and to the organisation of the nervous system. Structure and functions of bones and joints. Musculoskeletal structure of the trunk, with reference to breathing and movement. Motor systems. Structure and function of the autonomic nervous system, and of the sensory systems. Central nervous system processing of information. Basic cellular mechanisms of signal transduction, nerve impulse conduction and muscle contraction.

Maintaining Life: Structure and function of the endocrine system. Cell injury and adaptation. Inflammation, wound healing and repair.

BMED 2102   Human Life Sciences B
12 credit points
Mrs Janod-Groves
Prerequisite: BMED 2101. Offered: July. Classes: 5 lec, 2 tut & 5 prac/wk. Assessment: Written & prac exams, essays, group discussions, oral presentation and poster presentation.
Maintaining Life: Principles of homeostasis at systemic and cellular levels. Structure and function of blood. Structure and function of: heart and circulation, including haemodynamic derangements; respiratory, urinary, and digestive. Basic cellular mechanisms of membrane transport, secretion and hormone action. Neoplasia. Effects of environmental stresses on body function.
Creating Life: Structure and function of reproductive organs. Elementary physiology of the embryo and foetus.

Bachelor of Medical Science Intermediate Elective units of study

All qualifying, prerequisite and corequisite units of study, details of staff, examinations, unit of study delivery and descriptions are as described under the appropriate Department or School entry for the BSc.

Electives (Select one): For Biochemistry electives, students will choose any combination of first and second semester units of study listed below (total units 16) in place of the core Biochemistry units of study.
- BCHM 2001 Genes and Proteins, 8 credit points
- BCHM 2901 Genes and Proteins (Advanced), 8 credit points
- BCHM 2002 Molecules, Metabolism and Cells, 8 credit points
- BCHM 2902 Molecules, Metabolism and Cells (Advanced), 8 credit points
- BIOL 2005 Molecular and General Genetics, 8 credit points
- BIOL 2905 Molecular and General Genetics (Advanced), 8 credit points
- HPSC 2001 Introductory Philosophy of Science, 4 credit points
- HPSC 2002 Introductory History of Science, 4 credit points

Bachelor of Medical Science Senior Core units of study (February)
The following are the core Senior units of study for the Bachelor of Medical Science:
- BMED 3001 Human Life Sciences, 4 credit points
- BMED 3002 Microbiology and Immunology, 8 credit points

BMED 3001   Human Life Sciences
4 credit points
Dr Phillips
Qualifying: BMED 2101 and 2102. Prerequisite: PCOL2001 and 2002, and BCHM (2001 or 2101 or 2901) and BCHM (2002 or 2102 or 2902). Offered: February. Classes: 1-2 lec & 2 tut/wk.
Assessment: Tut assessment, 4 group presentations, 1 essay.
In this unit of study students will investigate five topics drawn from the most active areas of research in cellular physiology and biology. The intention of the unit of study is to teach stu-

dents some of the basic principles of cellular function while giving them experience in extracting information from the scientific literature, summarising it and drawing conclusions from it. Emphasis is placed on the oral and written presentation by students of the results of their work. The unit of study makes extensive use of small-group teaching methods and problem-based learning with the lectures providing background information on the concepts and techniques dealt with in the small-group sessions.

Assessment is based on:
(1) performance in the small-group sessions,
(2) four oral group presentations one for each of the topics studied in the small-group sessions, and
(3) an essay on a subject related to the broad area of the unit of study.

The topics covered are as follows.
Membrane transport processes: The description of transport processes. The structural and functional properties of membrane transport proteins.
Cellular homeostatic mechanisms: The mechanisms by which cells control their composition and volume.
Signal-response coupling: The mechanisms by which cellular activity is controlled by events external to the cell. This includes receptor mechanisms, second messenger systems and the major types of cellular responses.
The cytoskeleton: The structure of the cytoskeleton and its role in cellular processes such as motility.
Cell-cell and cell-matrix interactions: The mechanisms by which cells adhere to each other and to their substrate and the influence of this on cellular behaviour.
Textbooks
Alberts, et al. Molecular Biology of the Cell. (3rd ed.)

BMED 3002   Microbiology and Immunology
8 credit points
Dr Humphery-Smith (Coordinator), Dr Britton, Prof. Reeves, Dr New, Mrs Dalins, Dr Carter, Dr Briscoe
Qualifying: BMED 2101 and 2102. Prerequisite: PCOL2001 and 2002, and BCHM (2001 or 2101 or 2901) and BCHM 2002 or 2102 or 2902). Offered: February. Classes: 4 lec & 5 prac/wk.
Assessment: One 3hr exam, prac.
This core unit of study is taught by the Department of Microbiology with a contribution from the Immunology Unit of the Department of Medicine.

It is designed to provide a basic understanding of:
(1) micro-organisms and their role in human biology, and
(2) introductory immunology.
Introduction to techniques. Comparative structure and function of micro-organisms. Principles and practice of taxonomy and identification of bacteria. Survey of major groups of medically important bacteria. Strategies of pathogenic organisms; host defence mechanisms; common modes of transmission; epidemiology. Immunology: functioning of the immune system, basic immunological techniques. Virology: structure of viruses, mechanisms of replication, virus interactions.

Bachelor of Medical Science Senior Elective units of study (February)
Except for History and Philosophy of Science 3102, all qualifying, pre- and corequisite units of study, details of staff, examinations, unit of study delivery and descriptions are as described under the appropriate Department or School entry for the BSc.
- ANAT 3001 Microscopy and Histochemistry, 12 credit points
- BCHM 3001 Molecular Biology and Structural Biochemistry, 12 credit points
- BCHM 3901 Molecular Biology and Structural Biochemistry (Advanced), 12 credit points
- BIOL 3103 Molecular Genetics and Recombinant DNA Technology, 12 credit points
- BIOL 3903 Molecular Genetics and Recombinant DNA Technology (Advanced), 12 credit points
- CPAT 3001 Cell Pathology A, 12 credit points

- HPSC 3102 History of the Biomedical Sciences, 12 credit points
- PCOL 3001 Molecular Pharmacology and Toxicology, 12 credit points
- PHSI3001 Neuroscience, 12 credit points

HPSC 3102   History of the Biomedical Sciences
12 credit points
Dr Griffiths
Qualifying: HPSC 2001 and 2002. **Offered:** February. **Classes:** 4 lec, 4 tut & 4 prac/wk. **Assessment:** Tut assignment, one 3000w essay, project report, take-home exam.
An introduction to some of the major episodes in the social and scientific history of biological and medical science.

Bachelor of Medical Science Senior Elective units of study (July)
Except for Anatomy and Histology 3003, Microbiology 3003, Immunology (BMED 3003) and Infectious Diseases (BMED 3004), all qualifying, pre- and corequisite units of study, details of staff, examinations, unit of study delivery and descriptions are as described under the appropriate Department or School entry for the BSc.

- ANAT 3002 Cells and Development, 12 credit points
- ANAT 3005 Topographical Anatomy, 12 credit points
- BCHM 3002 Metabolic and Medical Biochemistry, 12 credit points
- BCHM 3902 Metabolic and Medical Biochemistry (Advanced), 12 credit points
- BIOL 3203 Eukaryotic Genetics and Development, 12 credit points
- BIOL 3904 Eukaryotic Genetics and Development (Advanced), 12 credit points
- CPAT 3002 Cell Pathology B, 12 credit points
- MICR 3003 Molecular Biology of Pathogens, 12 credit points
- BMED 3003 Immunology, 12 credit points
- BMED 3004 Infectious Diseases, 12 credit points
- PCOL 3002 Neuro- and Cardiovascular Pharmacology, 12 credit points
- PHSI 3002 Neuroscience - Cellular and Integrative, 12 credit points
- PHSI 3003 Heart and Circulation, 12 credit points

ANAT 3005   Topographical Anatomy
12 credit points
Dr Provis
Qualifying: BMED 2101 and 2102. **Offered:** July. **Classes:** 3 lec & 9 tut or prac/wk. **Assessment:** One 3hr exam, one prac exam, one 2500w essay.
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.

BMED 3003   Immunology
12 credit points
Dr Helen Briscoe
Qualifying: BMED 2101 and 2102. **Prerequisite:** PCOL 2001 and 2002, and BCHM (2001 or 2101 or 2901) BCHM (2002 or 2102 or 2902). **Offered:** July. **Classes:** 3 lec, 1 tut & 8 prac/wk.
Assessment: Exam, essays, prac.
This unit of study, which will be taught by the Immunology Unit of the Department of Medicine with a contribution from the Centenary Institute of Cancer Medicine and Cell Biology, is designed to provide a comprehensive understanding of:
(1) the components and function of the immune system;
(2) the mechanisms of pathological immune processes;
(3) immunological techniques in diagnostic and research laboratories.
A quota will apply for entry into the unit of study. The following topics will be covered: the normal immune system; immunopathology; and immunological techniques.

BMED 3004   Infectious Diseases
12 credit points
Assoc. Prof. Harbour, Prof. Reeves
Qualifying: BMED 2101 and 2102. **Prerequisite:** PCOL 2001 and 2002, and BCHM (2001 or 2101 or 2901) or (2002 or 2102 or 2902). **Corequisite:** Coreq MICR 3003. **Offered:** July. **Classes:** 4 lec & 8 prac/wk. **Assessment:** One 3hr exam, one 1 hr prac, three lab reports.
This unit of study is coordinated by the Department of Infectious Diseases with assistance from the Department of Microbiology. The intake is restricted to a very limited number of students, and intending students should consult the Department of Infectious Diseases.
The unit of study is designed to provide an understanding of the infection process involving host-parasite interactions as well as the scientific basis of diagnosis and control. A small number of infections will be examined to show how traditional and advanced technology can be combined for diagnosis and epidemiological study of infectious disease. In addition, students will be expected to participate in a short vacation assignment of work experience in an approved diagnostic or public health laboratory-

MICR 3003   Molecular Biology of Pathogens
12 credit points
Dr Ferenci, Prof. Reeves, Dr Carter, Dr Humphery-Smith (Coordinator)
Qualifying: BMED 3002. **Prohibition:** May not be counted with MICR 3903. **Offered:** July. **Classes:** 3 lec, 8 prac & 1 other/wk. **Assessment:** Two 2hr exams, practical.
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.
Students are advised not to attempt this unit of study if they have not performed well in BMED 3002 Microbiology and Immunology.

MICR 3903   Molecular Biology of Pathogens (Advanced)
12 credit points
Dr Ferenci, Prof. Reeves, Dr Carter, Dr Humphery-Smith (Coordinator)
Qualifying: Credit or better in BMED 3002. **Prohibition:** May not be counted with MICR 3003. **Offered:** July. **Classes:** 4 lec & 8 prac/wk. **Assessment:** Two 2hr exams, practical.
Same details as MICR 3003, with advanced components

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 that are parallel with those of the Bachelor of Science Honours degree.
An Honours degree may be taken by students of sufficient merit in any of the Departments offering Senior level core or option courses. Entry to Honours courses 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.

Degree of Bachelor of Pharmacy (BPharm)

Note: The Senate has approved new Resolutions for the Bachelor of Pharmacy to take effect for new enrolments from 1999. The candidatures of students first enrolled before 1997 will continue to be governed by the pre-1997 Resolutions. The pre-1999 Resolutions are contained in the 1996 *Faculty of Science Handbook* and can be consulted at the Faculty Office or via the Faculty of Science pages at the University of Sydney Web site (www.scifac.usyd.edu.au). For students first enrolling in 1997 or 1998, the Resolutions governing their candidature for the first and second years of study are contained in the 1997 or 1998 *Faculty of Science Handbook.* The 1999 Resolutions will govern their candidature in the year 1999 and in subsequent years

Candidates should note that section 10 of these Resolutions requires that, except with the permission of the Dean, candidatures under the pre-1997 Resolutions must be completed by 31 December 2001.

Summary of requirements

The degree of Bachelor of Pharmacy degree is a full-time four year course. Progression towards the degree is by the accumulation of credit points. The requirements for the degree are set out in the Senate Resolutions, which should be read by all intending candidates (see below). The degree may be awarded at the Pass or Honours level.

To satisfy the requirement for the degree candidates must gain a minimum of 192 credit points by completing the units of study prescribed for the degree (see Section 2 of the Resolutions). The basic requirements are contained in Sections 2, 3, and 4.

During the first year of attendance candidates enrol in First Year units of study as follows:

Concepts in Biology, Human Biology, Chemistry A (Pharmacy), Chemistry B (Pharmacy), Introductory Pharmaceutical Science, Professional Pharmacy, Mathematics/Statistics (Pharmacy), Psychology 1001 and Psychology 1002.

Assumed knowledge

It should be noted that most of the above first year units of study will be taught on the assumption that students have reached the standard of assumed knowledge specified in Table V.

Prerequisites and corequisites

To be eligible to enrol in Second Year, Third Year and Fourth Year units of study, students must have completed the prerequisite unit(s) of study, if any. Any corequisite unit(s) of study not previously completed must be taken concurrently. (See Section 1).

Registration requirements for pharmacists

A student who intends to qualify to be registered as a pharmacist under the Pharmacy Act 1964 is first required to qualify for the degree of Bachelor of Pharmacy. In addition he or she is required to serve not less than 2000 hours as an assistant to a registered pharmacist in a pharmacy within the Commonwealth of Australia. This period must be served after the BPharm course has been successfully completed.

Further details concerning the requirements for registration can be obtained from the Pharmacy Board of New South Wales, 3rd Floor, 28 Foveaux Street, Surry Hills, NSW 2010, tel. (02) 9281 7736, fax (02) 9281 2924. Postal Address: Locked Bag 2, Haymarket, NSW 2000.

BPharm Degree Resolutions

See Chapter 7.

Table V: Bachelor of Pharmacy, Pass and Honours degrees

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(0 Offered
First Year Units of Study				
BIOL 1001	Concepts in Biology	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1901	*February*
BIOL 1003	Human Biology	6	A) HSC 2-unit Biology course. N) May not be counted with BIOL 1903	*July*
CHEM 1611	Chemistry A (Pharmacy)	6	A) HSC Chemistry 2-unit or the chemistry component of the 3/4-unit Science course and the 2-unit Mathematics course.	*Februaiy*
CHEM 1612	Chemistry B (Pharmacy)	6	P) CHEM 1611 Chemistry A (Pharmacy).	*July*
PHAR 1607	Introductory Pharmaceutical Science	4	A) HSC Chemistry 2-unit or the Chemistry component of the 3/4 unit Science course.	*July*
PHAR 1608	Professional Pharmacy	2		*July*
MATH 1604	Mathematics/Statistics (Pharmacy)	6	A) HSC 2-unit Mathematics or equivalent (Students without this assumed knowledge are advised to attend a bridging course in February).	*Februaiy*
PSYC 1001	Psychology 1001	6		*Februaiy*
PSYC 1002	Psychology 1002	6		*July*
Second Year Units of Study				
BCHM 2611	Proteins, Enzymes and Metabolism 1	3	P) CHEM 1611 and CHEM 1612.	*Februaiy*
BCHM 2612	Metabolism 2 and Genes	3	P) BCHM 2611.	*July*
MICR 2605	Microbiology (Pharmacy)	3	P) BIOL 1001 and 1003.	*February*
PCOL 2603	Pharmacology 2A (Pharmacy)	2	P) CHEM 1611 and CHEM 1612. C) BCHM 2611 and PHAR 2611.	*Februaiy*
PCOL 2604	Pharmacology 2B (Pharmacy)	2	Q) PCOL 2603. C) BCHM 2612 and PHAR 2612.	*July*
PHAR 2607	Pharmaceutical Microbiology	4	P) PHAR 1607. C) MICR 2605.	*July*
PHAR 2609	Medicinal Chemistry 2A	6	P) MATH 1604, CHEM 1612, CHEM 1612 and PHAR 1607. C) BCHM 2611 and PCOL 2603.	*Februaiy*
PHAR 2610	Medicinal Chemistry 2B	4	P) PHAR 2609.	*July*
PHAR 2611	Pharmacy Practice 2A	2	P) PSYC 1001 and 1002 and PHAR 1608. C) PCOL 2603.	*Februaiy*
PHAR 2612	Pharmacy Practice 2B	3	P) PHAR 2611.	*July*
PHAR 2613	Physical Pharmaceutics A	5	P) MATH 1604 and CHEM 1611 and CHEM 1612 and PHAR 1607.	*Februaiy*
PHAR 2614	Physical Pharmaceutics B	5	P) PHAR 2613.	*July*
PHSI 2604	Physiology 2A (Pharmacy)	3	P) BIOL 1001 and 1003.	*Februaiy*
PHSI 2605	Physiology 2B (Pharmacy)	3	P) PHSI 2604.	*July*
Third Year Units of Study				
PCOL 3603	Pharmacology 3A (Pharmacy)	6	P) PCOL 2603, PCOL 2604, PHSI 2604 and PHSI 2605. C) PHAR 3609 and PHAR 3613.	*Februaiy*
PCOL 3604	Pharmacology 3B (Pharmacy)	2	Q) PCOL 3603. C) PHAR 3610 and PHAR 3614.	*July*

Table V: Bachelor of Pharmacy, Pass and Honours degrees - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
PHAR 3601	Dispensing	4	P) PHAR 2613, PHAR 2614, and PHAR 2607. C) PHAR 3608.	*July*
PHAR 3607	Formulation A	3	P) PHAR 2607, PHAR 2613 and PHAR 2614. C) PHAR 3601.	*February*
PHAR 3608	Formulation B	2	P) PHAR 3607.	*July*
PHAR 3609	Medicinal Chemistry 3A	6	P) BCHM 2611 and BCHM 2612. C) PCOL 3603 and PHAR 3613.	*February*
PHAR 3610	Medicinal Chemistry 3B	6	P) PHAR 3609. C) PCOL 3604 and PHAR 3614.	*July*
PHAR 3611	Pharmacokinetics A	3	P) PHAR 2613 and PHAR 2614.	*February*
PHAR 3612	Pharmacokinetics B	3	P) PHAR 3611.	*July*
PHAR 3613	Pharmacy Practice 3A	6	C) PCOL 3603, PHAR 3611.	*February*
PHAR 3614	Pharmacy Practice 3B	7	P) PHAR 3613.	*July*
Fourth Year Units of Study				
PHAR 4601	Integrated Dispensing	4	P) PHAR 3601, PHAR 3613 and PHAR 3614.	*February*
PHAR 4602	New Drug Technologies	4	P) PHAR 3609 and PHAR 3610.	*February*
PHAR 4603	Pharmaceutics Workshop	4	P) PHAR 3611, PHAR 3612, PHAR 3607 and PHAR 3608.	*February*
PHAR 4604	Clinical Pathology A	2	P) PHAR 3609, PHAR 3610, PHAR 3613 and PHAR 3614.	*February*
PHAR 4607	Clinical Pathology B	4	P) PHAR 3613, PHAR 3614, PHAR 3609 and PHAR 3610.	*July*
PHAR 4606	Clinical Information/Technology	2	P) PHAR 3613, PHAR 3614, PCOL 3603, PCOL 3604, PHAR 3611 and PHAR 3612.	*July*
PHAR 4612	Pharmacotherapeutics A	5	P) PHAR 3613, PHAR 3614, PCOL 3603, PCOL 3604, PHAR 3611 and PHAR 3612.	*February*
PHAR 4610	Pharmacotherapeutics B	7	P) PHAR 4612.	*July*
PHAR 4613	Clinical Practice A	5	P) PHAR 3613, PHAR 3614, PCOL 3603, PCOL 3604, PHAR 3611 and PHAR 3612.	*February*
PHAR 4611	Clinical Practice B	7	P) PHAR 4613.	*July*
PHAR 4608	Ethics and History of Pharmacy	2		*July*
PHAR 4609	Pharmaceutical Management	4		*July*
NB: Students will enrol in one subject per semester in the following advanced units of study by invitation only:				
PHAR 4921	Pharmaceutics A (Advanced)	10	P) All third year pharmacy units of study. Enrolment by invitation to those with a high WAM.	*February*
PHAR 4924	Pharmaceutics B (Advanced)	10	P) PHAR 4921 at a credit level or better.	*July*
PHAR 4922	Pharmaceutical Chemistry A (Advanced)	10	P) All third year pharmacy units of study. Enrolment by invitation to those with a high WAM.	*February*
PHAR 4925	Pharmaceutical Chemistry B (Advanced)	10	P) PHAR 4922 at a credit level or better.	*July*
PHAR 4923	Pharmacy Practice A (Advanced)	10	P) All third year pharmacy units of study. Enrolment by invitation to those with a high WAM.	*February*

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Table

Table V: Bachelor of Pharmacy, Pass and Honours degrees - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(J) Offered
PHAR 4926	Pharmacy Practice B (Advanced)	10	P) PHAR 4923 at a credit level or better.	*July*
PCOL 4907	Pharmacology A Advanced (Pharmacy)	10	P) PCOL 3604.	*February*
PCOL 4908	Pharmacology B Advanced (Pharmacy)	10	P) PCOL 4907.	*July*

Table V: Bachelor of Pharmacy, Pass and Honours degrees - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(J)

Bachelor of Pharmacy

Pharmacy 1 st Year units of study

Pre-1997 Resolutions: Consult the Faculty of Science Handbook 1996 for details of units of study available under the pre-1997 Resolutions. The units of study are as prescribed by the Senate Resolutions in force from 1990. For further details consult the appropriate Department.

PHAR 1607   Introductory Pharmaceutical Science
4 credit points
Miss E Sainsbury
Assumed knowledge: HSC Chemistry 2-unit or the Chemistry component of the 3/4 unit Science course. **Offered:** July. **Classes:** 2.5hr lec & 1.5hr seminar/wk. **Assessment:** One 2hr theory exam, two presentations (oral and poster), quizzes and tutorial assessments.

Introductory Pharmaceutical Science provides an introduction to principles which will be expanded and applied in later years. Topics covered include an introduction to dosage forms, drugs from plants, pharmaceutical calculations, intermolecular forces in liquids and solids, dissolution and solubility, drugs as acids and bases, partitioning. Small group work in seminar/tutorial sessions will complement and support the learning of material introduced in lectures.

Textbooks

Martin AN. Physical Pharmacy. Lea & Febiger, 1993

PHAR 1608   Professional Pharmacy
2 credit points
Dr I Krass
Offered: July. **Classes:** 1 hr lec, 0.5hr seminar & 0.5hr fieldwork/wk. **Assessment:** One 1 hr theory exam, group presentation and report, assignment.

Professional Pharmacy provides an introduction to the professional practice of the pharmacist through lectures and fieldwork in clinical settings. Topics include an introduction to the role of the pharmacist in the health care system, the relationship of pharmacists to other health care professionals, and client expectations of the profession. Oracy and literacy skills are developed in the context of professional pharmacy issues.

MATH 1604   Mathematics/Statistics (Pharmacy)
6 credit points
Assumed knowledge: HSC 2-unit Mathematics or equivalent (Students without this assumed knowledge are advised to attend a bridging course in February). **Offered:** February.

Mathematics

Classes: 2 lec & 1 tut/wk. Assessment: Assignments (10%), one 2hr exam (90%).

This unit of study provides mathematical tools, mostly from the calculus, that are needed for other units of study in this degree. The emphasis is on the behaviour of functions of various kinds, leading to the solution of differential equations.

Textbooks

Huges-Hallett D. et al. Calculus (International Edition). Wiley.

Reference books

Arya JC. & Lardner RW. Mathematics for the Biological Sciences. Prentice-Hall

Gentry RD. Introduction to Calculus for the Biological and Health Sciences. Addison-Wesley

Statistics

Classes: 2 lec & 1 tut/wk. Assessment: Assignments and quizzes (20%), one 2hr exam (80%).

Data analysis, descriptive statistics, elementary probability theory, sampling methods, statistical inference, hypothesis testing, correlation and regression, analysis of variance.

Textbook

Phipps M.C & Quine M.P, A Primer of Statistics (3rd edn). Prentice-Hall.

CHEM 1611   Chemistry A (Pharmacy)
6 credit points
See School of Chemistry for list of staff
Assumed knowledge: HSC Chemistry 2-unit or the chemistry component of the 3/4-unit Science course and the 2-unit Mathematics course. **Offered:** February. Classes: 3 lec & 1 tut/wk & 3hrs prac/wk for 10 wks. **Assessment:** A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

Chemistry provides the basis for understanding molecular structures and processes, essential knowledge for many later year Pharmacy units of study. Lecture topics include some fundamental concepts, atomic theory, states and properties of matter, equations and stoichiometry, chemical energetics, equilibrium theory, solution theory, general acid-base theory, atomic structure, chemical bonding. Practical work is designed to enhance confidence and develop skills in the handling and manipulation of chemicals and in the observation and processing of experimental results.

Special preparative studies: Students wishing to enrol in CHEM 1611 who do not have the assumed chemical knowledge are advised to consult the School of Chemistry for information about a bridging course.

Textbooks

Students should obtain a booklist from the School of Chemistry during the orientation period.

CHEM 1612   Chemistry B (Pharmacy)
6 credit points
See School of Chemistry for list of staff
Prerequisite: CHEM 1611 Chemistry A (Pharmacy). Offered: July. Classes: 3 lec & 1 tut/wk & 3hrs prac/wk for 10 wks. Assessment: A theory examination is held at the end of the semester. Students are advised at the beginning of the semester about other factors contributing to assessment in the unit of study.

Chemistry provides the basis for understanding molecular structures and processes, essential knowledge for many later year Pharmacy units of study. Lecture topics include redox reactions, electrochemistry, introduction to colloids and surface chemistry, the biological periodic table, radiochemistry, introduction to organic chemistry, nomenclature, aliphatic chemistry, aromatic chemistry, heterocyclic compounds, isomerism, stereoisomerism, reaction mechanisms, biomolecules, amino acids and peptides, carbohydrates. Practical work is designed to enhance confidence and develop skills in the handling and manipulation of chemicals and in the observation and processing of experimental results.

Textbooks

Students should obtain a booklist from the School of Chemistry during the orientation period.

BIOL 1001   Concepts in Biology
6 credit points
Assumed knowledge: HSC 2-unit Biology course. **Prohibition:** May not be counted with BIOL 1901. **Offered:** February. **Classes:** 3 lec & 3 prac/wk. **Assessment:** One 2hr exam, assignments, classwork.

'Concepts in Biology' is an introduction to the major themes of modern biology. Starting with interactions between organisms in biological communities, we move on to the diversity of microorganisms, plants and animals. This is followed by introductory cell biology, which particularly emphasises how cells obtain and use energy, and leads into an introduction to molecular biology through the role of DNA in protein synthesis and development. The genetics of organisms is then discussed, leading to consideration of theories of evolution and the origins of the diversity of modern organisms. It is recommended that this unit of study be taken before all other Junior units of study in Biology.

Textbooks

Knox R B et al. Biology. McGraw-Hill, 1995

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Table
Units of study

BIOL 1003   **Human Biology**
6 credit points
Assumed knowledge: HSC 2-unit Biology course. **Prohibition:**
May not be counted with BIOL 1903. **Offered:** July. **Classes:** 2 lec, 1
session independent study & 3 prac/wk. **Assessment:** One 2hr
exam, assignments, 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, distri-
bution 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 contro-
versial aspects of human genetics. It is recommended that Con-
cepts in Biology 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 1901, provides entry to Intermedi-
ate units of study in genetics and cell biology in the School of
Biological Sciences, and with good performance or permission
the School's other Intermediate units of study.
Textbooks
Benjamin CL. et al. Human Biology. McGraw Hill, 1997

PSYC 1001   **Psychology 1001**
6 credit points
Offered: February. **Classes:** 3 lec, one 2hr demonstration/tut/wk.
Assessment: One 3hr exam, one 1000w essay, one tut test,
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; be-
havioural neuroscience; sensory processes; social psychology;
personality theory.
Textbooks
Psychology 1001 Handbook (1999) and others as advised.

PSYC 1002   **Psychology 1002**
6 credit points
Offered: July. **Classes:** 3 lec & 2hr demonstration/tut/wk.
Assessment: One 3hr exam, one 1250w prac report, one tut test,
experimental participation.

Psychology 1002 covers the following areas: human develop-
ment; human mental abilities; learning, motivation and abnor-
mal psychology; visual perception; cognitive processes.
Textbooks
Psychology 1002 Handbook (1999) and others as advised.

Pharmacy 2nd Year units of study
Pre-1997 Resolutions: Consult the Faculty of Science
Handbook 1996 for details of units of study available under
the pre-1997 resolutions. The units of study are prescribed by
the Senate Resolutions in force from 1990. For further details
consult the appropriate Department.

BCHM 2611   **Proteins, Enzymes and Metabolism 1**
3 credit points
Assoc Prof Jones and Biochemistry staff
Prerequisite: CHEM 1611 and CHEM 1612. **Offered:** February.
Classes: 3 lec/wk. **Assessment:** One 3hr exam & assignments.
This unit of study in Biochemistry and Molecular Biology is
designed to provide a firm basis in the chemistry of life. Ques-
tions to be addressed include: What are the chemical structures
of the components of living matter? How do their interactions
lead to the assembly of orgamsed macromolecules, cells, and
multicellular tissues and organisms? How does living matter 'ex-
tract' energy from its environment? How are chemical reactions
controlled inside living cells?

Specifically, the unit of study will cover the following topics:
structures of biological macromolecules (proteins, nucleic ac-
ids, and sugars); molecular morphology of cells; digestion, stor-
age, and utilisation of dietary carbohydrate; biological catalysts
(enzymes); generation of metabolic energy; metabolic adapta-
tion during starvation, exercise, and diabetes.

Textbooks
Campbell. Biochemistry (3rd edn). Saunders

BCHM 2612   **Metabolism 2 and Genes**
3 credit points
Assoc Prof Jones and Biochemistry staff
Prerequisite: BCHM 2611. **Offered:** July. **Classes:** 3 lec/wk.
Assessment: One 3hr exam & assignments.
This unit of study in Biochemistry and Molecular Biology is
designed to provide a firm basis in the chemistry of life. Ques-
tions to be addressed include: What are the chemical structures
of the components of living matter? How do their interactions
lead to the assembly of orgamsed macromolecules, cells, and
multicellular tissues and organisms? How does living matter 'ex-
tract' energy from its environment? How are chemical reactions
controlled inside living cells? How does an organism store and
decipher the information it needs to grow and reproduce?

Specifically, the unit of study will cover the following topics:
genetic engineering and the genetic code - storage, utilisation,
and control of genetic information (DNA); digestion, storage,
and utilisation of dietary lipid and protein; generation of meta-
bolic energy; metabolic adaptation during starvation, exercise,
and diabetes; inherited disorders of metabolism; pharmaceuti-
cal intervention in metabolic pathways.
Textbooks
Campbell. Biochemistry (3rd edn) Saunders

MICR 2605   **Microbiology (Pharmacy)**
3 credit points
Mrs Dalins
Prerequisite: BIOL 1001 and 1003. **Offered:** February. **Classes:** 2
lec & 2 or 2.5hr prac/wk for 10 wks. **Assessment:** One 2hr exam,
prac.

This unit of study provides information on the biology of micro-
organisms with particular reference to the importance of micro-
organisms in pharmaceutical sciences. Topics covered include:
history and scope of microbiology, methodology, comparison of
major groups of micro-organisms in terms of structure, function
and importance as well as selected aspects of applied microbiol-
ogy (microbial pathogenicity and epidemiology, growth, death
and control of micro-organisms including introduction to disin-
fection, preservation and spoilage of pharmaceutical products).
Practical: The practical component focuses on basic, safe
microbiological techniques and the use of these to study exam-
ples of microbial activity which are illustrative of the lecture
series.
Reference
Tortora GT et al. Microbiology: An Introduction. 5th ed,
    Benjainiri/Currimings, 1995

PCOL 2603   **Pharmacology 2A (Pharmacy)**
2 credit points
Assoc. Prof. Starmer, Assoc. Prof. Mylecharane
Prerequisite: CHEM 1611 and CHEM 1612. **Corequisite:** BCHM
2611 and PHAR 2611. **Offered:** February. **Classes:** 2 lec/wk & 2 x
2hr tut. **Assessment:** One 1.5hr exam.
The aim of this unit of study is for students to gain a basic un-
derstanding of drug actions which are related to physiological
and patholofical functions. It covers drug-receptor interactions,
the pharmacodynamics of peripheral and central neurotransmis-
sion, and the pharmacodynamics of autacoids.
Textbooks
Rang HP et al. Pharmacology. 3rd edn, Churchill Livingstone,
    1995
Study Aids
Dale M M & Dickenson A H. Companion to Pharmacology.
    Churchill Livingstone, 1993
Neal M J. Medical Pharmacology at a Glance. 3rd edn, Blackwell
    Scientific Publications, 1992
Reference Books
Cooper J R et al. The Biochemical Basis of Neuropharmacology.
    6th edn, Oxford, 1991
Hardman JG et al (eds). Goodman and Gilman's The
    Pharmacological Basis of Therapeutics. 9th edn, Pergamon,
    1996

PCOL 2604   Pharmacology 2B (Pharmacy)
2 credit points
Assoc. Prof. Starmer, Assoc. Prof. Myiecharane
Qualifying: PCOL 2603. **Corequisite:** BCHM 2612 and PHAR 2612. **Offered:** July. **Classes:** 2 lec/wk & 3 x 1 hr tut. **Assessment:** One 1.5hr exam.

The aims of this unit of study are first for students to continue to gain a basic understanding of drag actions which are related to physiological and pathological functions, and second, to develop an understanding of the therapeutic applications of drags based on their underlying pharmacodynamic and pharmacokinetic properties. The first part of this unit of study covers the pharmacodynamics of the endorine system; the second part covers cardiovascular and renal drugs, and the principles of chemotherapy.

Textbooks

Study aids and reference books as recommended for PCOL 2603
    Pharmacologt 2A (Pharmacy)

PHAR 2607   Pharmaceutical Microbiology
4 credit points
Dr EM Gipps
Prerequisite: PHAR 1607. Corequisite: MICR 2605. Offered: July. Classes: 1 hr lec & 3hr prac/wk. Assessment: 1.5hr exam (85%), laboratory work, presentation & assignment (15%).

A pharmacist should be able to make clean products and create clean situations. The definition of clean and the methods for achieving it depend on the product or situation. It may include sterilisation, asepsis, disinfection, antisepsis, preservation and contamination control. This unit of study covers reasons and standards for sterile, preserved and clean products, sources of contamination and contamination control in manufacture of pharmaceutical products, kinetics of killing micro-organisms by physical and chemical means, sterilisation - principles and methods, plus disinfection, antisepsis and preservation-principles and methods. Examples of case studies in contamination control include oral mixtures or topical creams in community or hospital pharmacy, intravenous or intramuscular solution injection in industry, endoscopes which can only be disinfected, protein injection such as insulin, rational use of antiseptics in the community e.g., for minor cuts or burns.

Reference books

Aulton ME (ed). Pharmaceutics: The Science of Dosage Form
    Design. Churchill Livingstone, 1988
Hugo WB & Russell AD. Pharmaceutical Microbiology.
    Blackwell, 1992

PHAR 2609   Medicinal Chemistry 2A
6 credit points
Assoc Prof D, Moore
Prerequisite: MATH 1604, CHEM 1612, CHEM 1612 and PHAR 1607. **Corequisite:** BCHM 2611 and PCOL 2603. **Offered:** February. **Classes:** 2hr lec & 1.5hr tut/wk & 3hr lab/workshop for 2 wk. **Assessment:** One 2hr exam (56%); laboratories, workshops, quizzes (44%).

Chemical stracture and physico-chemical properties related to biological activity; chemical kinetics of drug stability; quantitative analysis of drag substances and formulations; stereochemical aspects of pharmacological activity.

Textbooks

Nogrady T. Medicinal Chemistry - a Biochemical Approach,
    Oxford U.P., 1988
or
Foye, W.O et al. Principles of Medicinal Chemistry, Williams &
    Wilkins, 1995

Reference books

Burger AB. Medicinal Chemistry. 4th edn, Interscience, 1980
Pratt W & Taylor P. Principles of Drug Action: the Basis of
    Pharmacology. Churchill/Livingstone, 1990
Alberts A. Selective Toxicity. Methuen, 1985
Solomons TWG. Organic Chemistry. 5th edn, Wiley, 1992

PHAR 2610   Medicinal Chemistry 2B
4 credit points
Assoc Prof D, Moore
Prerequisite: PHAR 2609. **Offered:** July. **Classes:** 3hr lec, 0.5hrtut & 0.5 workshop/wk. **Assessment:** One 2hr exam (70%), classwork (30%).

Macromolecular targets of drug action; drug-receptor interactions and receptor-effector theories; drug design; QSAR and molecular modelling; drag metabolism, bioactivation and inactivation; advanced analytical methods for the identification of drugs, their metabolites and degradation products.

Textbooks

As for PHAR 2609 Medicinal Chemistry 2A

PHAR 2611   Pharmacy Practice 2A
2 credit points
Dr I Krass
Prerequisite: PSYC 1001 and 1002 and PHAR 1608. Corequisite: PCOL 2603. Offered: February. Classes: 1 lec/wk & 7 x 2hr tut. Assessment: One 1 hr exam (80%), tutorial assessment (20%).
Subject material covered in lectures will include a theoretical examination of the communication process and a discussion of various communication skills particularly in the health care setting. The lecture series is given by members of both the Psychology and Pharmacy Departments. Tutorial sessions will enable students to practice various communication skills in a group setting. Specifically, the tutorials will focus on the recognition of nonverbal communication, the use of compliance aids and questioning and listing techniques. The utilization of video equipment will allow self- and group assessment of communication exercises such as scripted role plays.

Textbooks

Tindall, W.N. et al. Communication Skills in Pharmacy Practice,
    Lea & Febiger, 1994
Herfindal, E.T et al. Textbook of Therapeutics: Drug and Disease
    Management, Williams & Wilkins, 1996
USP DI Drug Information for the Health Care Professional 1996
    (16th edn), United States Pharmacopoeial Convention Inc.
Facts and Comparison, Drug Interactions, Lippincott U.S.A, 1995

Reference books

Prescription Products Guide 1997, Vols 1 &2, Australian
    Pharmacy Publications Co.
The Merck Manual of Diagnosis and Therapy (17th edn), Merck,
    Sharp & Dohme Research Industries, 1997
Mims Annual, Multimedia Australia Pty Ltd, 1996

PHAR 2612   Pharmacy Practice 2B
3 credit points
Dr I Krass
Prerequisite: PHAR 2611. **Offered:** July. **Classes:** 2 lec/wk & 7 x 2hr tut. **Assessment:** One 1.5hr exam (80%), tutorial assessment (20%).

Therapeutics

Lecture topics: drug information, adverse drug reactions, drag interactions, epidemiology, pathophysiology, symptoms, signs, management of drag and non drag treatment of diseases of the endocrine system, respiratory system, cardiovascular system, and antibiotics. Actual applications of drag knowledge gained in other parts of the unit of study will be emphasised with priority given to the delivery of drag and disease state information to patients and other health professionals. Tutorials will examine drug management of relevant disease states and the communication of relevant drag information to patients using acquired communication skills in a counselling context.

Textbooks

As for PHAR 2611

PHAR 2613   Physical Pharmaceutics A
5 credit points
Dr H K Chan
Prerequisite: MATH 1604 and CHEM 1611 and CHEM 1612 and PHAR 1607. **Offered:** February. **Classes:** 3 lec/wk & 36hr prac & tuts. **Assessment:** One 2.5hr exam, continuous assessment, practical assessment.

Solid pharmaceuticals and particle science; liquid formulations; diffusion and dissolution of drugs; drag-packaging intereactions; surface and interfacial tension; surface active materials.

BPharm

Units of study

Textbooks

Martin A N. Physical Pharmacy. Lea & Febiger, 1993

Reference books

Aulton M W (ed). Pharmaceutics: The Science of Dosage Form
Design. Churchill Livingstone, 1988

Banker G S & Rhodes C T (eds). Modern Pharmaceutics. Marcel
Dekker, 1990

Connors K A et al. Chemical Stability of Pharmaceuticals. Wiley-
Interscience, 1979

Florence A T & Attwood D. Physiochemical Principles of
Pharmacy. Macmillan, 1988

Gennaro A R (ed). Remington's Pharmaceutical Sciences. Mack,
1985

Lachman L. et al The Theory and Practice of Industrial Pharmacy.
Lea & Febiger, 1986

PHAR 2614   Physical Pharmaceutics B

5 credit points
Dr H K Chan

Prerequisite: PHAR 2613. **Offered:** July. **Classes:** 3 lec & 0.5hrtut/
wk & 32hr prac. **Assessment:** One 2.5hr exam, continuous
assessment, practical assessment.

Theory and models; colloidal dispersions; rheology; micelle for-
mation; drug solubilisation; suspensions; emulsions; semisol-
ids; pharmaceutical complexes; biophysical properties of pro-
tein and peptide drugs.

Textbooks

As for PHAR 2613 Physical Pharmaceutics A

PHS! 2604   Physiology 2A (Pharmacy)

3 credit points
Dr L. Cottee

Prerequisite: BIOL 1001 and 1003. **Offered:** February. **Classes:** 3
lec/wk. **Assessment:** One 1.5hr exam and mide-semester
assessment.

This unit of study provides a broad basic knowledge of human
functions and includes studies of nerve and muscle physiology,
blood, heart and circulation and respiration.

Textbooks

Marieb EN. Human Anatomy & Physiology. 4th ed, Benjamin/
Cummings, 1998

PHSI2605   Physiology 2B (Pharmacy)

3 credit points
Dr L. Cottee

Prerequisite: PHSI 2604. **Offered:** July. **Classes:** 3 lec/wk.

Assessment: One 1.5hr exam and mide-semester assessment.

This unit of study provides a broad basic knowledge of endo-
crinology, reproduction, gastrointestinal function, body fluid
regulation, sensory perception, movement and consciousness.

Textbooks

Marieb EN. Human Anatomy & Physiology. 4th ed, Benjamin/
Cummings, 1998

Pharmacy 3rd Year units of study

PHAR 3601   **Dispensing**

4 credit points
Miss E Sainsbury

Prerequisite: PHAR 2613, PHAR 2614, and PHAR 2607.

Corequisite: PHAR 3608. **Offered:** July. **Classes:** 1 lec/tut & 3hr
prac/wk. **Assessment:** Two 3hr practical exams, one 90 min theory
exam, continuous assessment.

Introduction to dispensing practice, the importance of accuracy
in dispensing, the prescription, approaches to dispensing pre-
scriptions, labelling of dispensed medicines, containers, docu-
mentation of dispensing procedures, dispensing of particular
formulations, effect of changing formulation variables on the
physical properties and efficacy of pharmaceutical products.

A series of 3-hour practical classes complement the lecture/
tutorial series, allowing the students to prepare a variety of phar-
maceutical products and critically assess them, as well as facili-
tating the development of error-detection skills.

Textbooks

Australian Pharmaceutical Formulary. 16th edn, 1997

PCOL 3603   Pharmacology 3A (Pharmacy)

6 credit points
Associate Professor Mylecharane & Associate Professor Starmer

Prerequisite: PCOL 2603, PCOL 2604, PHSI 2604 and PHSI 2605.
Corequisite: PHAR 3609 and PHAR 3613. **Offered:** February.
Classes: 2 lec & 4hr prac/wk. **Assessment:** One 1.5hr exam, prac
exam, classwork.

The aim of this unit of study is for students to continue the de-
velopment of an understanding of the therapeutic applications
of drugs based on their underlying pharmacodynamic and phar-
macokinetic properties. It covers chemotherapy (antibacterial,
antiviral, antifungal, antiprotozoal, anmelmintic and anticancer
drugs), analgesics and anti-inflammatory agents, respiratory
drugs, drugs affecting nutritional and metabolic function, drugs
affecting blood, and immunosuppressants.

Practical: The practical classes provide an opportunity to ob-
serve and experience the effects of drugs in biological systems,
and include experimental, video, computer-interactive, tutorial,
assignment and workshop components; the classes are designed
to illustrate, revise and extend material covered in the lectures in
both the Intermediate and Senior year Pharmacology units of
study.

Textbooks

Textbook, study aids and reference books as recommended for
PCOL 2603 Pharmacology 2A (Pharmacy)

PCOL 3604   Pharmacology 3B (Pharmacy)

2 credit points
Assoc. Prof. Mylecharane

Qualifying: PCOL 3603. **Corequisite:** PHAR 3610 and PHAR 3614.
Offered: July. **Classes:** 2 lec/wk. **Assessment:** One 1.5hr exam.

The aims of this unit of study are first, for students to continue
the development of an understanding of the therapeutic applica-
tions of drugs based on their underlying pharmacodynamic and
pharmacokinetic properties, and second, to understand clinical
toxicology in the context of drug tfierapy and usage. The first
part of the unit of study covers gastro-intestinal drugs, anaes-
thetics, hypnotics, sedatives, anticonvulsants, anxiolytics, anti-
depressants, neuroleptics, and drugs used to treat motor distur-
bances and dementias. The second part of the unit of study cov-
ers principles of clinical toxicology, drug reactions and interac-
tions, reportage of drug reactions and the introduction of new
drugs, treatment of poisoning with drags and other agents, and
drug abuse.

Textbooks

Textbook, study aids and reference books as recommended for
PCOL 2603 Pharmacology 2A (Pharmacy)

PHAR 3607   Formulation A

3 credit points
Dr N Davies

Prerequisite: PHAR 2607, PHAR 2613 and PHAR 2614.
Corequisite: PHAR 3601. **Offered:** February. **Classes:** 2 lec/wk &
12hrs prac session & 2hrtuts. **Assessment:** One 2hr exam (90%);
prac (10%).

This unit of study aims to facilitate an understanding of the de-
sign, formulation, manufacture and evaluation of pharmaceuti-
cal dose forms. The unit starts with an introduction to different
dose forms and the importance of route of administration. Solid
dose forms are examined in detail. The formulation and evalua-
tion of aerosols is examined. The application and preparation of
radiopharmaceuticals is presented. Nasal delivery systems for
local and systmeic use are considered. Novel drug delivery tech-
nologies are also presented in this unit.

Practical: Two practical sessions will investigate the formula-
tion, manufacture and evaluation of solid dose forms.

Textbooks

Martin AN. Physical Pharamcy. Lea & Febiger, 1993

Reference books

Ansel et al. Pharmaceutical dose forms and Drug Delivery
Systems. 6th edn, lea & febiger

Aulton. Pharmaceutics: the Science of Dosage Form Design.
Churchill Livingston, 1988

Florence & Attwood. Physiochemical Principles of Pharmacy.
MacMiUan, 1988

PHAR3608 **Formulation B**
2 credit points
Dr N Davies
Prerequisite: PHAR 3607. **Offered:** July. **Classes:** 2 lec/wk.
Assessment: One 2hr exam, assignment.
This unit of study builds on the material presented in Formulation A (PHAR 3607). The topics covered in this unit include: parenteral and ophthalmic formulations; rectal dose forms; topical formulations; photobiology and sunscreens; and stability aspects of pharmaceutical dose forms. Case studies in product and process development will also be studied.
Textbooks
As for PHAR 3607

PHAR 3609 Medicinal Chemistry 3A
6 credit points
Dr M Morris
Prerequisite: BCHM 2611 and BCHM 2612. **Corequisite:** PCOL 3603 and PHAR 3613. **Offered:** February. **Classes:** 3 lec & 1 hr tut/wk & 4hr of prac for 6 weeks. **Assessment:** One 3hr exam (70%), classwork (30%).
This unit of study deals with the application of the principles of medicinal chemistry learned in Year 2 to groups of drugs categorised by their pharmacological mode of action. For each, drag and development, the chemistry pertinent to drag use and the mode of drag action will be covered.
Drugs acting on neurotransmitters and their receptors to cover cholinergics, anticholinergics, opiate analgesics, opiates used for diarrhoea and as antitussives, adrenergic drugs, dopaminergics; local anaesthetics; NSAIDS; enzyme inhibitors as drags to include anticholinseterases, MAO, ACE; inhibitors as antiviral compounds, antibacterials, and anticancer drugs; cardiac glycosides; antilipidemic drugs.
Laboratory work will consist of the preparation of an analytical profile of a drag and is to be undertaken as a team activity over 6 weeks.

PHAR 3610 Medicinal Chemistry 3B
6 credit points
Dr M Morris
Prerequisite: PHAR 3609. Corequisite: PCOL 3604 and PHAR 3614. Offered: July. Classes: 3 lec & 1 hr tut/wk & 4hr of prac for 6 weeks. Assessment: One 3hr exam (70%), classwork (30%).
This unit of study continues on the principles of medicinal chemistry established and developed in Medicinal Chemistry 3A (PHAR 3609).
Lectures will be on the following: drags acting on nucleic acids used as antitumor, antimalarials and antimicrobials (antibacterial and antiviral); antimetabolites (against amino acid and nucleic acids); diuretics; drugs acting on hormones to include antihormone therapy of cancer, hormone therapy, sex hormone analogues, corticosteroids, vitamins and minerals; photochemistry and photobiology; radiopharmaceuticals, their production, handling and use; drugs from plants to include organic and inorganic substances; herbal medicines and remedies and their active ingredients; pharmacognosy.
Laboratory work will be selected from the preparation, characterisation and testing of an enzyme inhibitor; the characterisation of plant materials and the extraction and identification of active principles; the investigation of drag metabolism and metabolite characterisation; peptide synthesis; purification and assay for biological activity; receptor characterisation through binding studies of ligands.
Textbooks
As for PHAR 2609

PHAR 3611 Pharmacokinetics A
3 credit points
Dr D Cutler
Prerequisite: PHAR 2613 and PHAR 2614. Offered: February. Classes: 2.5 lec &0.5 tut/wk. Assessment: One 2hr exam.
Fundamental concepts of pharmacokinetics; mass balance principle; elimination, extraction ratio, clearance, bioavailability, constant rate infusion, first pass effect; volume of distribution; intervenous bolus kinetics; kinetics following extravascular dos-

es; renal excretion; hepatic elimination mechanisms; tissue distribution mechanisms; calculation of multiple dose regimens.

PHAR 3612 Pharmacokinetics B
3 credit points
Dr I Ramzan
Prerequisite: PHAR 3611. Offered: July. Classes: 2.5 lec &0.5 tut/wk. Assessment: One 2hr exam, continuous assessment.
Pharmacodynamics, metabolite pharmacokinetics, variability in pharmacokinetics and pharmacodynamics, pharmacokinetics and biopharmaceutics of selected drag classes; biotechnology products; bioequivalence; pharmacokinetics and pharmacodynamics in drug development.

PHAR 3613 Pharmacy Practice 3A
6 credit points
Dr K Williams
Corequisite: PCOL 3603, PHAR 3611. Offered: February. Classes: 2 lec/wk & 10 x 2hr tuts & 9 x 4hr field work sessions. Assessment: 0.5hr oral exam (50%), tutorials (10%), externship assessment (10%), two cases (20%), two computer quizzes (10%).
Therapeutics: This section is a continuation of the therapeutics section of Pharmacy Practice 2B (PHAR 2612). Topics covered include epidemiology, pathophysiology, symptoms, signs, management of drug and non-drug treatment of diseases associated with gastrointestinal, and rheumatology. The unit of study will explore the role of pharmacists in conducting medication regime reviews, implementing clinical intervention and interprofessional communications.
Externships: The externship will integrate lecture material with practice. Students will complete case studies and report back to tutorials. Problem-solving skills will be enhanced.
Tutorial: The tutorials will employ problem-based learning techniques. Computer patient medication review systems will be analysed. A number of computerised drug information data bases will be used. Role play will be used to develop students' communication skills in pharmacist/patient and pharmacist/doctor interactions. Familiarisation with microcomputer software written specifically for pharmacists will take place.

PHAR 3614 Pharmacy Practice 3B
7 credit points
Dr K Williams
Prerequisite: PHAR 3613. Offered: July. Classes: 3 lec/wk & 10 x 2hrTuts & 9 x 4hr field work sessions. Assessment: 0.5hr oral exam (50%), tutorials (10%), externship assessment (10%), two cases (20%), two computer quizzes (10%).
Therapeutics: This section is a continuation of the therapeutics section of Pharmacy Practice 3A (PHAR 3613). Topics covered include epidemiology, pathophysiology, symptoms, signs, management of drug and non-drag treatment of diseases associated with obstetrics and gynaecology, dermatology, oncology, genito-urinary tract, hepatic, and nutrition. The unit of study will explore the role of pharmacists in conducting medication regime reviews, implementing clinical intervention and interprofessional communications.
Externships: The externship will integrate lecture material with practice. Students will complete case studies and report back to tutorials. Problem-solving skills will be enhanced.
Tutorial: The tutorials will employ problem-based learning techniques. Computer patient medication review systems will be analysed. A number of computerised drag information data bases will be used. Role play will be used to develop students' communication skills in pharmacist/patient and pharmacist/doctor interactions. Familiarisation with microcomputer software written specifically for pharmacists will take place.
Textbooks
As for PHAR 3613 Pharmacy Practice 3A

BPharm

Units of study

Pharmacy 4th Year Units of Study

PHAR 4601   Integrated Dispensing
4 credit points
Dr A McLachlan and Ms S Taylor
Prerequisite: PHAR 3601, PHAR 3613 and PHAR 3614. Offered: February. Classes: 4hr prac class/wk. Assessment: Prac work exam (50%), continuous assessment (50%).

The aim of Integrated Dispensing is to link together, in a meaningful way, the skills and knowledge that students have developed in Dispensing and Pharmacy Practice. The emphasis is on clinical practice and will develop the theme that dispensing is not a single event but requires skills and knowledge from a variety of areas of pharmacy practice as well as interaction with the patient and prescribes This will be achieved using a simulated practice environment. Students will learn to integrate the training they have received in dose form preparation with patient counselling skills, forensic and administrative requirements (including the use of computer-based dispensing programs), as well as the professional aspects of pharmacy to allow them to become competent dispensers of medicines.

PHAR 4602   New Drug Technologies
4 credit points
Professor B Roufogalis
Prerequisite: PHAR 3609 and PHAR 3610. **Offered:** February. **Classes:** 3 lec & 1 tut/wk. **Assessment:** Two 2hr exam (86%) and 1 quiz/class assessment (14%).

Therapeutic Products from Biotechnology (12 lectures, 4 tutorials) : Brief review of the structure and function of deoxyribonucleic acid; the genetic code, replication, transcription, recombinant DNA technology; isolation and purification of protein gene products; general properties of biotechnology-produced pharmaceutical products; handling and storage of biotechnology-produced products; specific examples of biotechnology-produced products (including insulin, growth hormone, tissue plasminogen activator, DNase, interferons, hematopoietic growth factors, clotting factors); recombinant DNA - produced pharmaceuticals under development; impact of biotechnology on pharmaceutical care; influence of biotechnology on drug discovery (screening, receptor structure determination, protein engineering); gene therapy.

Application of immunology and Pharmaceutical Products (9 lectures, 3 tutorials): Introduction to the cells of the immune system (lymphocytes, mononuclear phagocytes, granulocytes); haematopoiesis haematopoietic agents; acquired versus cell-mediated immunity; phases of immune response (cognitive, activation, effector mediation via complement, phagocytosis, granulocytosis); outline of the inflammatory response; B-lymphocytes and antibodies/antibody therapy and diagnosis, T-lymphocytes and antigen presentation/vaccine development; helper cells and infection; hypersensitivity; interleukins; cytokines; immune response and immune diseases; examples of molecular medicine (HIV, rheymatoid arthritis, lupus, multiple sclerosis, Grave's disease).

Toxicology (21 lectures, 7 tutorials): General toxicity testing -Aspects covered include test design, type, results and interpretation; the place of toxicology in the community and in the development of pharmaceuticals. Specific topics include: clinical toxicology (treatment of overdose, clinical manifestations of poisonous plants), management of poisoning, envenomation and its treatment), regulation by government of toxicity of pharmaceuticals and chemical substances; subacute and chronic toxicity; carcinogenicity; texatogenicity, mutagenesis, organ toxicity.

Biochemical mechanisms of toxicity: Factors affecting toxicity and the mode of action of toxic chemicals and pharmaceuticals are discussed. These include metabolic transformations and the balance between detoxification and intoxication pathways, genetic factors, induction and inhibition of metabolic pathways. Toxicity of xenobiotics (eg lipid peroxidation, altered calcium homeostasis, covalent binding and alkylation). Experimental approach to understanding cell death. Toxicology of environmental chemicals, including pesticides, arylamides (eg paracetamol), polycycUc hydrocarbons, fungal metabolites, herbicides (eg paraquat) and hydrocarbons (solvents).

Textbooks
Foye WO, Lemke TL & Williams DA. Principles of Medicinal Chemistry. (4th edn), Williams & Wilkins, 1995
Klaassen CD, Amdur MO & Doull J. Casarett and Doull's Toxicology: The Basic Sciences of Poisons. (3rd edn), Macmillan, 1986 (or 4th edn, 1991)
Abbas AK, Lichtman AH & Pober JS. Cellular and Molecular Immunology. WB Saunders Company, 1991

PHAR 4603   Pharmaceutics Workshop
4 credit points
Dr I Ramzan
Prerequisite: PHAR 3611, PHAR 3612, PHAR 3607 and PHAR 3608. Offered: February. Classes: 4hrtut/workshop/wk. Assessment: Assignments (70%) and oral presentation (30%).

Small group workshops will consider problems of formulation and delivery of drugs with a range of physiochemical, biopharmaceutic, pharmacokinetc and therapeutic properties. The selected examples will include drugs with high and low aqueous solubility, with long and short elimination half-lives with low and high clearances and with narrow and wide therapeutic range. Each student will be given the task of developing a pharmaceutical profile for an individual drug to be presented for group discussion at the workshop.

PHAR 4604   Clinical Pathology A
2 credit points
DrM Ivery, Mr T Chen
Prerequisite: PHAR 3609, PHAR 3610, PHAR 3613 and PHAR 3614. **Offered:** February. **Classes:** 10 x 1 hr lees; 18hrs tuts; 1-2hrs independent study/wk. **Assessment:** Continuous assessment through case studies and quizzes.

The principles and practice of various tests on the physiological and biochemical processes in health and disease will be discussed. The interpretation of the results of clinical investigations used for diagnosis, screening and monitoring of various conditions will be covered.

PHAR 4607   **Clinical Pathology B**
4 credit points
Dr M Ivery and Mr T Chen
Prerequisite: PHAR 3613, PHAR 3614, PHAR 3609 and PHAR 3610. Offered: July. Classes: 3 lec/wk & 7 x 2hrs tut. Assessment: Continuous assessment through case studies and quizzes.

The principles and practice of various tests on the physiological and biochemical processes in health and disease, as applied to diagnosis, treatment and prevention of disease. The basic laboratory principles and techniques, and pathophysiology and methods of analysis are covered.

Textbooks
Kaplan A & Szabo L L. Clinical Chemistry: Interpretation and Techniques. William and Wilkins, 1994

PHAR 4606   Clinical Information/Technology
2 credit points
Professor Si Benrimoj
Prerequisite: PHAR 3613, PHAR 3614, PCOL 3603, PCOL 3604, PHAR 3611 and PHAR 3612. Offered: July. Classes: 4 lec; twelve 2hrtut (2hr/wk). Assessment: Written assignments (100%).

Critical evaluation of the literature using clinical trial papers will take place. Drug and disease information responses will be prepared by each students using technology to search and retrieve information from data bases. The communication of these responses to patients and healm care professionals will undertaken using novel computer technology. As new technology becomes available it is important for students to have the necessary skills to operate and use such technology in the healthcare setting. This unit of study will use the latest technology in a practice environment. Initially students will use clinical trial papers to understand and critically evaluate literature in this area. They will use this information in their case history preparations. They will prepare drug information responses as would be required by a practising pharmacist in the healthcare environment. Time will be spent in the laboratory accessing the latest information networks and using CD ROM data bases to prepare appropriate drag information for other healthcare professionals and

patients. The students will present their responses to their peers for critical evaluation and improvement.

PHAR 4612 **Pharmacotherapeutics A**
5 credit points
Professor SI Benrimoj
Prerequisite: PHAR 3613, PHAR 3614, PCOL 3603, PCOL 3604, PHAR 3611 and PHAR 3612. **Offered:** February. **Classes:** 1hrlec& 4hrs tuts/wk. **Assessment:** Case studies (80%), quizzes (10%), tutorial participation (10%).

Therapeutics lectures will be followed up with tutorials which will be practice-based in order to illustrate specific practice situations. Therapeutics topics will be covered in great detail in order to understand how drags affect different populations, how drugs are used in different situations and specific drugs are chosen and the dosage regimen which is appropriate for that disease. In addition, the ability to communicate such information in an appropriate manner will be discussed. The Therapeutics topics to be covered in this unit include: endocrinology, cardiology, respiratory, oncology. The unit of study will expand the role of the pharmacist in monitoring therapeutic outcomes, and in participating in therapeutic decision-making.
Textbooks
Edwards & Walker. Clinical Pharmacy and Therapeutics.
Herfindal. Clinical Pharmacy and Therapeutics.

PHAR 4610 **Pharmacotherapeutics B**
7 credit points
Professor SI Benrimoj
Prerequisite: PHAR 4612. **Offered:** July. **Classes: 4** lec **& 2** hr tut/ **wk. Assessment:** Oral exam (40%), case studies (30%), quizzes (20%) & tutorial participation (10%).

This unit of study continues on from Pharmacotherapeutics A. Therapeutics lectures will be followed up with tutorials which will be practice-based in order to illustrate specific practice situations. Therapeutics topics will be covered in great detail in order to understand how drugs affect different populations, how drags are used in different situations and how specific drugs are chosen and the dosage regimen which is appropriate for that disease. In addition, the ability to communicate such information in an appropriate manner will be discussed. The unit will expand the role of the pharmacist in monitoring therapeutic outcomes and participation in therapeutic decision-making.
Textbooks
As for PHAR 4612 Pharmacotherapeutics A

PHAR 4613 **Clinical Practice A**
5 credit points
Professor SI Benrimoj
Prerequisite: PHAR 3613, PHAR 3614, PCOL 3603, PCOL 3604, PHAR 3611 and PHAR 3612. **Offered:** February. **Classes:** 1 hr tut & 4hrs clinical rounds/wk. **Assessment:** Case assessment by peers and clinical specialists (100%).

This unit of study will expect the students to follow the progress of patients by extracting and organising information from patient medication histories and interviews. Literature information relevant to the case will be sought in an attempt to review and propose therapeutic options for management. Aspects of communication, verbal presentation and an ability to discuss the case critically will be developed through the unit of study. Each case study will cover the drags under review, the disease state, past medical and pharmaceutical history, social and demographic parameters. The students' decision making ability will be developed. The appropriateness of therapeutic plans will be reviewed.
Textbooks
Edwards & Walker. Clinical Pharmacy and Therapeutics.
Herfindal. Clinical Pharmacy and Therapeutics.
USP-DI. Drug Information for the Health Care Professional.

PHAR 4611 **Clinical Practice B**
7 credit points
Professor SI Benrimoj
Prerequisite: PHAR 4613. **Offered:** July. **Classes:** 1hr lec & 6hrs clinical rounds/week. **Assessment:** Case assessment by peers and clinical specialists (100%).

This unit of study is a continuation of Clinical Practice A. This unit of study will expect the students to follow the progress of

patients by extracting and organising information from patient medication histories and interviews. Literature information relevant to the case will be sought in an attempt to review and propose therapeutic options for management. Aspects of communication, verbal presentation and an ability to discuss the case critically will be developed through the course. Each case study will cover the drugs under review, the disease state, past medical and pharmaceutical history, social and demographic parameters. The students' decision making ability will be developed. The appropriateness of therapeutic plans will be reviewed.
Textbooks
As for PHAR 4613 Clinical Practice A

PHAR 4608 **Ethics and History of Pharmacy**
2 credit points
Professor SI Benrimoj
Offered: July. Classes: 1 lec/wk & 7 x 2hrtuts. Assessment: Written exam (50%), tutorial assessment (50%).

Topics to be covered are the beginnings and antiquity of Pharmacy, main periods of Pharmacy history, traditions of Asian, European and American Pharmacy, the beginnings and growth and diversity of Pharmacy Practice in Australia, the changing relationships between Pharmacy and allied professions, roles which Pharmacy has played in the Australian community. Topics include standards of society, the Pharmacy Board, the Society of Hospital Pharmacists, ethical behaviour in practice. Professional misconduct cases will be discussed.
Textbooks
Haines G. Pharmacy in Australia - the National Experience.

PHAR 4609 **Pharmaceutical Management**
4 credit points
Professor SI Benrimoj
Offered: July. **Classes:** 4 lec/wk. **Assessment:** Written exam (100%).

Topics to be covered include registration of therapeutic substances in Australia, clinical research trials, pharmacoeconomics, industry management, business management, basic marketing and accounting, law, hospital administration, negotiation and conflict resolution skills.

Pharmacy Honours (from 2000)
Offered: February.
Fourth Year units of study available under the 1997 Resolutions from 2000. The following Fourth Year units of study are scheduled for implementation in 2000.
- PHAR 4921 Pharmaceutics A (Advanced), 10 credit points
- PHAR 4924 Pharmaceutics B (Advanced), 10 credit points
- PHAR 4923 Pharmacy Practice A (Advanced), 10 credit points
- PHAR 4926 Pharmacy Practice A (Advanced), 10 credit points
- PHAR 4922 Pharmaceutical Chemistry A (Advanced), 10 credit points
- PHAR 4925 Pharmaceutical Chemistry BAdvanced), 10 credit points
- PCOL 4907 Pharmacology A (Advanced), 10 credit points
- PCOL 4908 Pharmacology B (Advanced), 10 credit points
  Students will enrol in one subject in these advanced units by invitation only.

PHAR 4921 **Pharmaceutics A (Advanced)**
10 credit points
Dr A McLachlan
Prerequisite: All third year pharmacy units of study. Enrolment by invitation to those with a high WAM. **Offered:** February. **Classes:** 1 hr lec/tut, 1 hr Seminar & 8hr Project/wk. **Assessment:** Examination/ assignment (10%), Oral presentation (10%) & Report on project (80%).

The Pharmaceutics Honours unit of study is designed to extend the Pharmacy undergraduate's knowledge and skills in research methodology, problem solving and written and oral scientific communication in specialist areas of Pharmaceutics. The unit of study provides an important basis in advanced coursework and laboratory research for those who wish to become candidates for the PhD, MSc and MPharm degrees. (Honours students will

also retain essentially all of the professionally based training of the Pass degree and complete in the same time.) A maximum of 10 students will be enrolled by invitation only.

PHAR 4924   Pharmaceutics B (Advanced)
10 credit points
Dr A McLachlan
Prerequisite: PHAR 4921 at a credit level or better. **Offered:** July. **Classes:** 1 hr lec/tut, 1 hr seminar & 8 hr prac/wk. **Assessment:** Oral presentation - 10%, Examination - 1 0% & Project/report - 80%.

The PHAR 4924 Pharmaceutics B (Advanced) unit of study is designed to extend the Pharmacy undergraduate's knowledge and skills in research practice and problem solving, and written and oral scientific communication acquired in the February semester unit of study PHAR 4921 Pharmaceutics A (Advanced). The course provides an important basis for those who may wish to branch into specialised areas and will be particularly useful for those seeking employment in industrial, government, hospital laboratories, research institutions and also for those considering continuation to postgraduate studies.

The lecture/tutorial and seminar components of the unit of study (2 credit points) will assist in the development of advanced laboratory based research skills and will complement the research project. The individual research project prepared in the February semester will be pursued (8 credit points). A final research presentation and report describing research results and conclusions is to be presented at the end of the July Semester.

PHAR 4922   Pharmaceutical Chemistry A (Advanced)
10 credit points
Dr C Duke
Prerequisite: All third year pharmacy units of study. Enrolment by invitation to those with a high WAM. **Offered:** February. **Classes:** 1 hr lec/tut/seminar & 9hr Project/wk. **Assessment:** Examination/ assignment (10%), Oral presentation (10%), Report on project (80%).

The Pharmaceutical Chemistry A (Advanced) unit of study is designed to extend the Pharmacy undergraduate's knowledge and skills in research practice and problem solving, and written and oral scientific communication, The unit of study provides an important basis for those who wish to become candidates for the PhD, MSc and MPharm degrees. In addition, elective units of study provide extra training in specialised areas and will be particularly useful for those seeking employment in industrial, government and hospital laboratories. (Honours students will also retain essentially all of the professionally based training of the pass degree and complete in the same time.)

PHAR 4925   Pharmaceutical Chemistry B (Advanced)
10 credit points
Dr C Duke
Prerequisite: PHAR 4922 at a credit level or better. **Offered:** July. **Classes:** 1 hr lec/tut/seminar & 9 hr practical work/wk. **Assessment:** Oral presentation - 1 0% , Examination - 10% & Project/report- 80%.

The PHAR 4925 Pharmaceutical Chemistry B (Advanced) course is designed to extend the Pharmacy undergraduate's knowledge and skills in research practice and problem solving, and written and oral scientific communication acquired in the February semester unit of study PHAR 4922 Pharmaceutical Chemistry A (Advanced). The course provides an important basis for those who may wish to branch into specialised areas and will be particularly useful for those seeking employment in industrial, government, hospital laboratories, research institutions and also for those considering continuation to postgraduate studies.

The lecture/mtoriayseminar component of the course (1 Unit) will assist in the development of advanced laboratory based research skills and will complement the research project. The individual research project prepared in the February semester will be pursued (9 Units). A final research presentation and report describing research results and conclusions is to be presented at the end of the July Semester.

PHAR 4923   Pharmacy Practice A (Advanced)
10 credit points
Dr I Krass & Professor SI Benrimoj
Prerequisite: All third year pharmacy units of study. Enrolment by invitation to those with a high WAM. Offered: February. Classes: 5 lec & 5 tut/wk. Assessment: Examination/assignment - 20%, Oral presentation - 20% & Report on Protocol - 60%.

Weekly discussion between students, their supervisors and other pharmacy practice personnel will take place in order to evaluate and formulate possible methodologies for research projects. Students will provide short oral presentations for open discussion with other staff and postgraduate students at the weekly scheduled pharmacy practice research meetings, research projects in areas of Pharmacy Practice such as Pharmacoeconomics, Pharmacoepidemiology, professional Practice, Geriatric Patients, Asthma Management and Clinical Practice will be offered. (Honours students will also retain essentially all of the professionally based training of the pass degree and complete in the same time.) A maximum of 10 students will be enrolled by invitation only.

PHAR 4926   Pharmacy Practice B (Advanced)
10 credit points
Dr I Krass & Professor SI Benrimoj
Prerequisite: PHAR 4923 at a credit level or better. Offered: July.
Classes: 1 hr lec/tut/seminar & 9 hr Research Project/ wk.
Assessment: Protocol presentation 10%, Report 90%.

The unit of study is designed to extend the Pharmacy undergraduate's knowledge and skills in research practice and problem solving, and written and oral scientific communication acquired in the February semester unit of study PHAR 4923 Pharmacy Practice A (Advanced). The unit of study provides an important basis for fJiose who may wish to branch into specialised areas and will be particularly useful for those seeking employment in industrial, government, hospital laboratories, research institutions and also for those considering continuation to postgraduate studies.

The lecture/tutoiial/seminar component of the course (1 credit point) will assist in the development of advanced research skills and will complement the research project. A final research presentation and report describing research results and conclusions is to be presented at the end of the July semester.

PCOL 4907   Pharmacology A Advanced (Pharmacy)
10 credit points
Assoc. Prof. Mylecharane, Assoc. Prof. Starmer
Prerequisite: PCOL 3604. Offered: February. Classes: Two 2hr seminar & 5hr prac/wk. Assessment: One 3hr exam (seminar), one 1.5hr exam (prac), oral and written presentations, classwork.

The aim of this unit of study is to develop students' awareness and understanding of the pivotal role of experimental pharmacology in the development of drugs, and to develop their ability to conduct experimental investigations in accordance with established standards of scientific methodology and critical analysis. The experimental pharmacological aspects of the development of selected drug classes is studied by means of enquiry-based and problem-based learning approaches utilizing seminar/workshops, library research and written assignments. Experience in a range of pharmacological experimental techniques is gained in supervised laboratory practical classes by completing a series of experimental pharmacological investigations into the actions of selected classes of drugs whose activity is well established; experience in the practical aspects of experiment design, analysis, interpretation and reporting of pharmacological investigations is also gained. Students will also select and prepare for an experimental pharmacology research project, which will be undertaken in PCOL 4908 Pharmacology B Advanced (Pharmacy), by preparing a literature survey and research proposal for both oral and written presentation.

Textbooks

Textbook, study aids and reference books as recommended for
   PCOL 2603 Pharmacology 2A (Pharmacy)

PCOL 4908   Pharmacology B Advanced (Pharmacy)
10 credit points
Assoc. Prof. Mylecharane, Assoc. Prof. Starmer
Prerequisite: PCOL 4907. **Offered:** July. **Classes:** 10hr research laboratory placement/wk. **Assessment:** Oral presentation, written dissertation, laboratory placement work.

The aim of this unit of study is to develop students' awareness and understanding of the pivotal role of experimental pharmacology in the development of drugs, and to develop their ability to conduct experimental investigations in accordance with established standards of scientific methodology and critical analysis. In this unit of study, each student will gain experience in some advanced experimental pharmacological research techniques, through the undertaking of an individual research project under the direct supervision of academic and research staff in the Department, and the preparation of an oral presentation and a written dissertation on the experimental project work. The experimental project work is undertaken in the July semester, during placement for 1.5 contiguous days per week in Department research laboratories. Students are selected for participation in their individual research projects following initial preparation in the February semester unit of study, PCOL 4907 Pharmacology A Advanced (Pharmacy), in which literature reviews and research proposals are completed.

Textbooks

Textbook, study aids and reference books as recommended for
   PCOL 2603 Pharmacology 2A (Pharmacy)

BPharm

Units of study

Degree of Bachelor of Psychology (BPsych)

Summary of requirements

The Bachelor of Psychology degree is an Honours program in the Faculty of Science and requires four years of full-time study. Progression towards the degree of Bachelor of Psychology is by accumulation of Science Faculty credit points, by achieving the required average grade in each year of study in the Science Subject Area of Psychology (see Senate Resolutions for the degree) and by mamtaining a yearly average mark of 65 or greater.

The requirements for the degree are set out in the Senate Resolutions, which should be read by all intending candidates (see Chapter 7). The Resolutions in force prior to 2000 are contained in the 1999 Faculty of Science Handbook, which can be inspected at the Faculty Office. To complete the degree you must gain credit for at least 192 credit points. 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.
- least 36 credit points from Junior units of study in Science Subject Areas.
- at least 12 credit points of units of study in the Science Subject Areas of Mathematics and Statistics.
- at least 16 credit points of Intermediate Psychology units of study at an average grade of Distinction or better.
- at least 16 credit points from Intermediate units of study in a Science Subject Area other than Psychology.
- at least 36 credit points of Senior Psychology units of study (including PSYC3201 and PSYC3202) at an average grade of Distinction or better across all Senior Psychology units of study.
- at least 72 credit points from Senior and Intermediate units of study in Science Subject Areas.
- 48 credit points of fourth year (Honours) Psychology units of study with a grade of Honours (H3 or better).

You should also note the following:
- you can only take units of study which do not have timetable clashes.
- most full-time students enrol in 24 credit points (four 6 credit point units) of Junior units of study in each semester of their first year.
- you may not enrol in more than 28 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.
- you may not enrol in more than 28 credit points of units of study not in the Science Subject Areas. Normally those wishing to take 28 credit points from outside the Science Subject Areas would take 12 credit points of Junior and 16 credit points of Intermediate units of study (see 'Study in other Faculties' in Table 1: BSc).
- you may not enrol in more than 32 credit points of Intermediate units of study in a single Science Subject Area.
- you may not enrol in more than 16 credit points of Intermediate units of study and more than 24 credit points of Senior units of study in the Science Subject Areas of Anatomy and Histology, Cell Pathology, Immunology, Pharmacology and Physiology.
- you may not enrol in more than 16 credit points of Intermediate units of study in Engineering Science.
- you may not enrol in more than 48 credit points of Senior units of study in a single Science Subject Area.
- you may not enrol in Psychology Honours until you have completed at least 144 credit points of units of study and have satisfied all requirements for the degree of BPsych except those related to Fourth Year.
- Students who fail to meet progression requirements may be permitted to transfer to another degree for which progression requirements have been met.

Students should refer to the Table of units of study for the BSc (Table I).

UAI
A quota exists for admission into the degree of Bachelor of Psychology

Transferring into the BPsych degree

A student enrolled in the BSc, BSc (Advanced), BSc (Molecular Biology and Genetics), BMedSc or BA degree who has completed a minimum of 48 credit points of Junior units of study as prescribed for the BPsych degree, and who has obtained minimum grades of pass, including 12 credit points of Psychology with an average grade of High Distinction (85% or better), may apply to the Dean for permission to transfer into the Intermediate year of the BPsych degree. Selection is on academic merit and subject to a quota determined by the Dean.

BPsych Degree Resolutions
See Chapter 7.

Honours in the Faculty of Science

Honours units of study in BSc, BCST, BMedSc, BPharm or BPsych

The regulations governing Honours units of study in the Faculty of Science are Sections 16-18 (BSc), 12-14 (BCST), 11-13 (BMedSc), 9 (BPharm) and 11-12 (BPsych) of the Senate Resolutions. Candidates should note particularly Section 16 (BSc), 12 (BCST), 11 (BMedSc), or 11 (BPsych) and that approval both from Faculty and the Head of the Department concerned is required. To obtain permission from the Faculty, applicants must have gained an average of Credit grades in 24 credit points of Senior units of study relating to the intended Honours subject or have a WAM of at least 58 (applications for advice of WAM may be lodged at the Faculty Office; see below for WAM calculation). Note also that Heads of Department may apply additional guidelines. The Head of Department will determine the availability of half-time Honours units of study in the Department concerned.

In the case of candidates applying under Section 16(2)(ii) of the Senate Resolutions for the degree of Bachelor of Science, Section 12(2)(ii) of the Senate Resolutions for the degree of Bachelor of Computer Science and Technology or Section 11 (2)(if) of the Senate Resolutions for the degree of Bachelor of Medical Science, the Dean, on behalf of the Faculty, shall be responsible for deternnning whether candidates may be admitted to an Honours unit of study by assessing whether the overall performance of each applicant is comparable to pass graduates of the Faculty of Science eligible for admission to an Honours unit of study.

It is usual for candidates to take the same subject in Honours that they have taken at the Senior level. Permission can, however, be given by the Faculty for taking an Honours unit of study without having taken the Senior unit of study when previous training is suitable. For example, it is permissible to study Biophysics in Biology Honours without having taken Intermediate and Senior Biology units of study if Physics or Physical Chemistry have been taken instead. Similarly Honours in Geophysics may be taken in certain circumstances without having taken Senior Geophysics units of study.

Where an Honours unit of study differs from the previous specialisation, the Head of the appropriate Department and the Faculty of Science must be satisfied that previous training is adequate.

Note that there is a quota on Psychology Honours and admission is on a competitive basis.

Award of Honours and ranking for postgraduate scholarships

The Faculty has adopted a system of Weighted Average Marks (WAM) in relation to the award of Honours and ranking for postgraduate scholarships. The WAM is an integer between 45 and 100 which is an overall measure of performance in the pre-Honours years. It is calculated by summing the products of the marks achieved and the weighted credit point values of the units of study taken in the pre-Honours years and then dividing by the sum of the weighted credit point values. Note that *all* attempts at units of study are included in the calculation except where units of study are discontinued with permission. The formula used is:

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

where W_c is the weighted credit point value - i.e., credit point value x level weighting of 1 (Junior), 2 (Intermediate) or 3 (Senior) - and M_c is the greater of 45 or the mark out of 100 for the unit of study.

In calculating the WAM 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 that university. Where no mark is provided by the institution the bottom of the range for the equivalent grade is used initially (this mark may be revised at the Board of Examiners in light of additional information), unless additional evidence of a higher mark is provided eg. marks or rankings from subject coordinators.

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 pre-Honours years 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 stipulates that a candidate with a WAM of less than 80 or an Honours mark of less than 90 would not normally receive a medal. A candidate with an honours mark of 90 or greater and a WAM of 77 to 79 inclusive may be considered for the award of a medal only if it can be demonstrated that the WAM was affected by sickness, misadventure, unusual workload or choice of units of study. The Faculty recognises, however, that the Senate resolutions concerning medals relate the award of a medal to the Honours units of study only.

The Faculty also stipulates that a student with a WAM of less than 68 or an Honours year mark of less than 80 would receive first class Honours only in exceptional circumstances. Students who have a WAM within the range of 65 to 67 and who obtain a combined mark of 148 or greater (WAM plus fourth year mark) may be considered for the award of First Class Honours only if it can be demonstrated that their WAM was affected by sickness, misadventure, unusual work load or choice of units of study, and/or they can demonstrate exceptional performance in their Honours unit of study.

Candidates who have a WAM of 77 to 79 inclusive or 65 to 67 inclusive and who consider that their WAM was affected by exceptional circumstances are advised to discuss their cases with the Dean, or the Dean's nominee, early in their Honours enrolment and in any event before the beginning of their second semester.

The award of second and third class Honours is made on the basis of the Honours year mark only. A candidate who fails the Honours year is recorded 'Fail' in that year and is awarded a pass degree.

Ranking for postgraduate scholarships is determined by a combination of the WAM and the Honours mark.

BPsych Honours Summary

Honours units of study

From 1999 the Faculty introduced semesterised Honours units of study to allow increased flexibility, especially for part-time and July semester enrolment. There are now four codes for all subject areas that offer Honours, and these are listed below.

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 7 of this handbook for further information. Not all departments offer students part-time enrolment in Honours, or Honours enrolment commencing from the July semester. Students considering these types of enrolment are urged to contact the department concerned.

Students enrolling in Honours in all subject areas (excluding COMP, INFO, or ISYS in the Department of Computer Science, and BPharm new resolutions) must enrol as follows:
Full-time students enrol in:
• A & B unit in February semester
• C & D unit in July semester

Eg, Biology honours full-time enrolment
February semester
BIOL 4011 Biology Honours A
BIOL 4012 Biology Honours B
July semester
BIOL 4013 Biology Honours C
BIOL 4014 Biology Honours D

Part-time students enrol in:
- A unit in February semester of your first year
- B unit in July semester of your first year
- C unit in February semester of your second year
- D unit in July semester of your second year

Eg, Chemistry Honours part-time enrolment in 2000 and 2001

2000 February semester
CHEM 4011 Chemistry Honours A

2000 July semester
CHEM 4012 Chemistry Honours B

2001 February semester
CHEM 4013 Chemistry Honours C*

2001 July semester
CHEM 4014 Chemistry Honours D*

(*Students would pre-enrol for these units of study in October of their first year.)

Please note that students intending to enrol in COMP or INFO or ISYS Honous must contact the Department of Computer Science to deterrmne which units of study to enrol in.

Honours Units of Study

(a) Unit of Study	(b)	Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
Agricultural Chemistry Honours				
AGCH 4021	Agricultural Chemistry Honours A	12		*Februaiy, July*
AGCH 4022	Agricultural Chemistry Honours B	12		*Februaiy, July*
AGCH 4023	Agricultural Chemistry Honours C	12		*Februaiy, July*
AGCH 4024	Agricultural Chemistry Honours D	12		*Februaiy, July*
Anatomy and Histology Honours				
ANAT 4011	Anatomy Honours A	12		*Februaiy, July*
ANAT 4012	Anatomy Honours B	12		*Februaiy, July*
ANAT 4013	Anatomy Honours C	12		*Februaiy, July*
ANAT 4014	Anatomy Honours D	12		*Februaiy, July*
Biochemistry Honours				
BCHM 4011	Biochemistry Honours A	12		*Februaiy, July*
BCHM 4012	Biochemistry Honours B	12		*Februaiy, July*
BCHM 4013	Biochemistry Honours C	12		*Februaiy, July*
BCHM 4014	Biochemistry Honours D	12		*Februaiy, July*
Biology Honours				
BIOL 4011	Biology Honours A	12		*Februaiy, July*
BIOL 4012	Biology Honours B	12		*Februaiy, July*
BIOL 4013	Biology Honours C	12		*Februaiy, July*
BIOL 4014	Biology Honours D	12		*Februaiy, July*
Chemistry Honours				
CHEM 4011	Chemistry Honours A	12		*Februaiy, July*
CHEM 4012	Chemistry Honours B	12		*Februaiy, July*
CHEM 4013	Chemistry Honours C	12		*Februaiy, July*
CHEM 4014	Chemistry Honours D	12		*Februaiy, July*
Computer Science Honours				
COMP 4301	Algorithms (Advanced Topic)	4	P) Credit in COMP 3001. *NB: This unit may be available in Februaiy or July semester; it may not always be offered.*	*Februaiy, July*
COMP 4302	Artificial Intelligence (Advanced Topic)	4	P) Credit in COMP 3002. *NB: This unit may be available in Februaiy or July semester; it may not always be offered.*	*Februaiy, July*

Honours Units of Study - continued

(a) Unit of Study	(b)	(o) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
COMP 4304	Graphics (Advanced Topic)	4	P) Credit in COMP 3004. *NB: This unit may be available in February or July semester; it may not always be offered.*	*February, July*
COMP 4305	Networked Systems (Advanced Topic)	4	P) Credit in COMP 3007. *NB: This unit may be available in February or July semester; it may not always be offered.*	*February, July*
COMP 4307	Distributed Systems (Advanced Topic)	4	P) Credit in COMP 3007 or Credit in COMP 3009. *NB: This unit may be available in February or July semester; it may not always be offered.*	*February, July*
COMP 4309	Object-Oriented Systems (Advanced Topic)	4	P) Credit in COMP 3008. *NB: This unit may be available in Februaty or July semester; it may not always be offered.*	*February, July*
COMP 4400	Operating Systems (Advanced Topic)	4	P) Credit in COMP 3009. *NB: This unit may be available in Februaty or July semester; it may not always be offered.*	*Februaty, July*
COMP 4401	Software Engineering (Advanced Topic)	4	P) Credit in COMP 3100. *NB: This unit may be available in February or Judy semester; it may not always be offered.*	*Februaty, July*
COMP 4402	User Interfaces (Advanced Topic)	4	P) Credit in COMP 3102. *NB: This unit may be available in Februaty or July semester; it may not always be offered.*	*February, Jidy*
COMP 4403	Computation Theory (Advanced Topic)	4	P) Credit in COMP 2003 and 8 credit points of Intermediate Mathematics. *NB: This unit may be available in February or July semester; it may not always be offered.*	*Februaty, July*
COMP 4404	Scientific Visualisation (Advanced Topic)	4	P) Credit in one of: COMP 3001 or COMP 3304 or PHYS 3303. *NB: This unit may be available in February or July semester; it may not always be offered.*	*Februaty, July*
COMP 4601	Advances in Computer Science 1	4	P) Permission of Head of Department. *NB: Tins unit may be available in Februaty or July semester; it may not always be offered.*	*February, July*
COMP 4602	Advances in Computer Science 2	4	P) Permission of Head of Department. *NB: This unit may be available in February or July semester; it may not always be offered.*	*February, July*
COMP 4603	Advances in Computer Science 3	4	P) Permission of Head of Department. *NB: This unit may be available in Februaty or July semester; it may not always be offered.*	*February, July*
COMP 4604	Advances in Computer Science 4	4	P) Permission of Head of Department. *NB: This unit may be available in February or July semester; it may not always be offered.*	*February, July*
INFO 4300	Information Systems (Advanced Topic)	4	P) Credit in COMP 3000. *NB: This unit may be available in Februaty or July semester; it may not always be offered.*	*February, July*
INFO 4306	Database Systems (Advanced Topic)	4	P) Credit in COMP 3005. *NB: Tfiis unit may be available in Februaty or July semester; it may not always be offered.*	*February, Jidy*
INFO 4901	Research Preparation	8	P) Permission of Head of Department. *NB: * Unit of study subject to Faculty approval.*	*Februaty, July*
INFO 4902	Research Project	16	P) Permission of Head of Department. *NB: * Unit of study subject to Faculty approval.*	*Februaty, Jidy*
Cell Pathology Honours				
CPAT 4011	Cell Pathology Honours A	12		*February, July*
CPAT 4012	Cell Pathology Honours B	12		*Februaiy, July*

Honours Units of Study - continued

(a) Unit of Study	(b)	(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
CPAT 4013	Cell Pathology Honours C	12		*February, July*
CPAT 4014	Cell Pathology Honours D	12		*February, July*
Geography Honours				
GEOG 4011	Geography Honours A	12		*February, July*
GEOG 4012	Geography Honours B	12		*February, July*
GEOG 4013	Geography Honours C	12		*February, July*
GEOG 4014	Geography Honours D	12		*February, July*
Geology Honours				
GEOL 4011	Geology Honours A	12		*February, July*
GEOL 4012	Geology Honours B	12		*February, July*
GEOL 4013	Geology Honours C	12		*February, July*
GEOL 4014	Geology Honours D	12		*February, July*
Geophysics Honours				
GEOP 4011	Geophysics Honours A	12		*February, July*
GEOP 4012	Geophysics Honours B	12		*February, July*
GEOP 4013	Geophysics Honours C	12		*February, July*
GEOP 4014	Geophysics Honours D	12		*February, July*
History and Philosophy of Science Honours				
HPSC 4011	History and Philosophy of Science Honours A	12		*February, July*
HPSC 4012	History and Philosophy of Science Honours B	12		*February, July*
HPSC 4013	History and Philosophy of Science Honours C	12		*February, July*
HPSC 4014	History and Philosophy of Science Honours D	12		*February, July*
Immunology Honours				
BMED 4011	Immunology Honours A	12		*February, July*
BMED 4012	Immunology Honours B	12		*February, July*
BMED 4013	Immunology Honours C	12		*February, July*
BMED 4014	Immunology Honours D	12		*February, July*
Infectious Diseases Honours				
BMED 4021	Infectious Diseases Honours A	12		*February, July*

Honours

Table

Honours Units of Study - continued

fa) Unit of Study	(b)	(c) Credit Points	(dV(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
BMED 4022	Infectious Diseases Honours **B**	12		*February, July*
BMED 4023	Infectious Diseases Honours **c**	12		*February, July*
BMED 4024	Infectious Diseases Honours **D**	12		*Februaiy, July*
Information Systems Honours				
ISYS 4301	Information Systems Honours **A**	12		*Februaiy, July*
ISYS 4302	Information Systems Honours **B**	12		*Februaiy, July*
ISYS 4303	Information Systems Honours **c**	12		*Februaiy, July*
ISYS 4304	Information Systems Honours **D**	12		*Februaiy, July*
Marine Sciences Honours				
MARS 4011	Marine Science Honours A	12		*Februaiy, July*
MARS 4012	Marine Science Honours B	12		*Februaiy, July*
MARS 4013	Marine Science Honours C	12		*Februaiy, July*
MARS 4014	Marine Science Honours D	12		*Februaiy, July*
Pure Mathematics Honours				
MATH 4301	Pure Mathematics Honours A	12		*Februaiy, July*
MATH 4302	Pure Mathematics Honours B	12		*Februaiy, July*
MATH 4303	Pure Mathematics Honours C	12		*Februaiy, July*
MATH 4304	Pure Mathematics Honours D	12		*Februaiy, July*
Applied Mathematics Honours				
MATH 4401	Applied Mathematics Honours A	12		*Februaiy, July*
MATH 4402	Applied Mathematics Honours B	12		*Februaiy, July*
MATH 4403	Applied Mathematics Honours C	12		*February, July*
MATH 4404	Applied Mathematics Honours D	12		*Februaiy, July*
Microbiology Honours				
MICR 4011	Microbiology Honours A	12		*Februaiy, July*
MICR 4012	Microbiology Honours B	12		*Februaiy, July*
MICR 4013	Microbiology Honours C	12		*Februaiy, July*
MICR 4014	Microbiology Honours D	12		*Februaiy, July*

Honours Units of Study - continued

(a) Unit of Study		(c) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
Pharmacology Honours				
PCOL 4011	Pharmacology Honours A	12		*February, July*
PCOL 4012	Pharmacology Honours B	12		*February, July*
PCOL 4013	Pharmacology Honours C	12		*February, July*
PCOL 4014	Pharmacology Honours D	12		*February, July*
Pharmacy Honours: Pre-1997 Resolutions				
PHAR 4511	Pharmaceutical Chemistry Honours A	12		*February, July*
PHAR 4512	Pharmaceutical Chemistry Honours B	12		*February, July*
PHAR 4513	Pharmaceutical Chemistry Honours C	12		*February, July*
PHAR 4514	Pharmaceutical Chemistry Honours D	12		*February, July*
PHAR 4521	Pharmacy Practice Honours A	12		*February, July*
PHAR 4522	Pharmacy Practice Honours B	12		*February, July*
PHAR 4523	Pharmacy Practice HonoursC	12		*February, July*
PHAR 4524	Pharmacy Practice Honours D	12		*February, July*
PHAR 4541	Pharmaceutics Honours A	12		*February, July*
PHAR 4542	Pharmaceutics Honours B	12		*February, July*
PHAR 4543	Pharmaceutics Honours C	12		*February, July*
PHAR 4544	Pharmaceutics Honours D	12		*February, July*
Physics Honours				
PHYS 4011	Physics Honours A	12		*February, July*
PHYS 4012	Physics Honours B	12		*February, July*
PHYS 4013	Physics Honours C	12		*February, July*
PHYS 4014	Physics Honours D	12		*February, July*
Physiology Honours				
PHSI 4011	Physiology Honours A	12		*February, July*
PHSI 4012	Physiology Honours B	12		*February, July*
PHSI 4013	Physiology Honours C	12		*February, July*
PHSI 4014	Physiology Honours D	12		*February, July*

Honours

Table

Honours Units of Study - continued

(a) Unit of Study	(o) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered
Psychology Honours			
PSYC 4011 Psychology Honours A	12		*Februaiy, July*
PSYC 4012 Psychology Honours B	12		*Februaiy, July*
PSYC 4013 Psychology Honours C	12		*Februaiy, July*
PSYC 4014 Psychology Honours D	12		*February, July*
Soil Science Honours			
SOIL 4021 Soil Science Honours A	12		*Februaiy, July*
SOIL 4022 Soil Science Honours B	12		*Februaiy, July*
SOIL 4023 Soil Science Honours C	12		*Februaiy, July*
SOIL 4024 Soil Science Honours D	12		*Februaiy, July*
Mathematical Statistics Honours			
STAT 4201 Mathematical Statistics Honours A	12		*Februaiy, July*
STAT 4202 Mathematical Statistics Honours B	12		*February, July*
STAT 4203 Mathematical Statistics Honours C	12		*Februaiy, July*
STAT 4204 Mathematical Statistics Honours D	12		*February, July*

(a) Unit of Study	(o) Credit Points	(d)/(e) A) Assumed Knowledge Q) Qualifying P) Prerequisite C) Corequisite N) Prohibition	(f) Offered

CHAPTER 4

Talented student program

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, BCST, BPsych and their specialist streams or joint 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) over 98.7 and a mark of over 90 in at least one science subject area and/or over 95 in 4-unit Mathematics; or demonstrate exceptional performance in scientific study (e.g., at the level of participation in an International Olympiad).
- to be considered for the program in their second and third years, students should normally have SCIWAMs over 85 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 Senate Resolutions (e.g., Resolution 6(2) of the BSc 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.

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 TSP allows a student to enrol in up to 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 year 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: Dr Alan Fekete
Senior Agricultural Chemistry
Coordinator: Associate Professor Les Copeland
Students may undertake, in addition to normal coursework, a special research project directly supervised by a member of the academic staff.
Biochemistry
Coordinator: Dr Anthony Weiss
A special program of study will be developed for individual students enrolled in Intermediate or Senior Biochemistry.
Biology
Coordinator: Dr Bruce Lyon
Students may undertake additional seminars and/or special project work.
Chemistry
Coordinator: Dr Scott Kable
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 l(SSP) is by invitation only, and is limited to 20 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 Chemistry 3A and 3B and two special modules (one per half-semester). In each module, students work as a group to solve a substantial real-life problem in contemporary Chemistry. In addition, the normal Senior Chemistry laboratory subjects are modified to include special TSP experiments. The program is offered under the Senior Chemistry (Advanced) program, but admission is by invitation only and is limited to 15 students each year. TSP students are automatically eligible.
Computer Science
Coordinator: Dr Alan Fekete
The Department will make special arrangements for individual students throughout their studies. Interested students should contact the TSP coordinator as soon as possible.
Intermediate Geography
Coordinator: Dr David Chapman
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: Professor Peter Davies
Students will be offered extra seminars and/or special project work.
Mathematics and Statistics
Coordinator: Associate Professor Christopher Durrant
Students admitted to the program have the following options available to them:
• a weekly seminar program for first-year students
• additional options from units of study in Mathematics and Statistics either in lieu of, or in addition to, other units of study of study
• a combination of additional options from units of study in Mathematics and Statistics combined with special studies in another discipline
• a special research project in lieu of, or in addition to, normal unit of study components
• various combinations of the above options.

Medical Science
Coordinator: Dr Ian Spence
Microbiology
Coordinator: Dr T. Ferenci
A special program of study will be developed for individual students enrolled in Microbiology.
Pharmacology
Coordinator: Dr Ian Spence
The Department will make special arrangements for individual students throughout their studies.
Physics
Coordinators: Dr Richard Hunstead and Professor David McKenzie
Junior students may take extra seminars and special project work in addition to, or in lieu of, parts of Physics (Advanced) units of study. Intermediate students may take extra seminars and special project work in addition to, or in lieu of, parts of Intermediate Physics units of study. Senior students may take extra seminars and special research project work in addition to, or in lieu of, parts of Senior Physics units of study.

An excursion to visit research facilities outside Sydney is offered in the mid-semester break in the July semester.
Psychology
Coordinator: Dr Ros Markham
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 (e.g. 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: Professor Alex McBratney
Students may undertake, in addition to normal coursework, a special research project.

Graduate units of study

Master of Information Technology (MInfTech)

The Resolutions for this course are outlined in Chapter 8.

Course overview

The Master of Information Technology requires 1.5 years (3 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 one year of coursework and a one semester project in your major area of interest.

During the first and second semesters of attendance you have the opportunity to select from a number of computer science units of study. These cover areas such as object-oriented systems, computer graphics, artificial intelligence, database systems, operating systems, software engineering, networks and user interfaces. All units of study are listed for each semester, but not all will be offered at any time. Availablility will depend on staff interests and resources; contact the Director for information.

Also available during the first year is selection of units of study covering advanced topics within various areas. In addition you have the option in the February and July semester to study a subject which involves completing a group project. Project options are available in computer systems, large scale software, algorithmic systems, intelligent systems and product development.

You can also choose to study a limited amount of other approved units of study from outside the Computer Science Department.

In your third semester you will be required to complete a substantial piece of programming using the knowledge gained during the course. This project may be related to your employment.

Table 1 (each unit of study 6 credit points)

Students select units of study from this Table in their area of interest. (Not all units of study in this table will be offered in any given semester.)

    INFO 5000 Information Systems
    COMP 5001 Algorithms
    COMP 5002 Artificial Intelligence
    COMP 5003 Computer Architecture
    COMP 5004 Computer Graphics
    COMP 5005 Database Systems
    COMP 5006 Declarative Programming Languages
    COMP 5007 Networked Systems
    COMP 5008 Object Oriented Systems
    COMP 5009 Operating Systems
    COMP 5100 Software Engineering
    COMP 5101 Theory of Computation
    COMP 5102 User Interfaces

Table 2 (each unit of study 6 credit points)

Units of study are group projects designed to put into practice the work covered in Table 1. Only one unit of study may be taken from this table. (Not all units of study in this table will be offered in any given semester.)

    COMP 5201 Algorithmic Systems Project
    COMP 5202 Computer Systems Project
    COMP 5203 Intelligent Systems Project
    COMP 5204 Large-Scale Software Project
    COMP 5205 Product Development Project

Table 3 (each unit of study 6 credit points)

A minimum of 24 credit points must be chosen from this Table and Table 4. Please note: availability of units of study in this Table may vary.

    INFO 5300 Information Systems (Advanced Topic)
    COMP 5301 Algorithms (Adv Topic)
    COMP 5302 Artificial Intell (Adv Topic)
    COMP 5303 Comp Architecture (Adv Topic)
    COMP 5304 Computer Graphics (Adv Topic)
    COMP 5305 Computer Networks (Adv Topic)
    COMP 5306 Database Systems (Adv Topic)
    COMP 5307 Distributed Systems (Adv Topic)
    COMP 5308 Machine Learning (Adv Topic)
    COMP 5309 O-O Systems (Adv Topic)
    COMP 5400 Operating Systems (Adv Topic)
    COMP 5401 Software Eng (Adv Topic)
    COMP 5402 User Interfaces (Adv Topic)
    COMP 5403 Computation Theory (Adv Topic)
    COMP 5404 Scientific Visualisation (Adv Topic)
    COMP 5301-5304 contain specific material on recent advances in these areas and content will change as necessary to accommodate advances in technology.

Table 4 (each unit of study 6 credit points)

A minimum of 24 credit points must be chosen from this Table and Table 3. Please note: availability of units of study in this Table may vary.

    COMP 5601 Advances in Computer Science 1
    COMP 5602 Advances in Computer Science 2
    COMP 5603 Advances in Computer Science 3
    COMP 5604 Advances in Computer Science 4
    COMP 5601-5604 contain specific material on recent advances in these areas and content will change as necessary to accommodate advances in technology.

Table 5 (24 credit points)

COMP 5701 Information Technology Project

    This project is compulsory for all students in the Master of Information Technology.

Course outcomes

Upon completion of the Master of Information Technology graduates will have a sound knowledge base in several cutting-edge topics within information technology. They will also have experience in applying this knowledge to the implementation of a useful system.

Admission requirements

To be eligible you must have either:

(i) a three year degree with a major in computer science from an approved University or equivalent and at least a Credit or "B" average in the final year computer science component.

    OR

(ii) a three year degree with a major in computer science from an approved University or equivalent and two years of experience in the information technology industry in a role such as analysis/programming, network management, technical support or systems integration. Experience in sales or operations is not counted as technical.

Course Requirements

To be awarded the Master of Information Technology you will need to successfully complete 72 credit points. A normal full-time workload is 24 credit points per semester.

Each unit of study is worth six credit points with the exception of the Information Technology Project which is worth 24 credit points.

You will need to select your units of study at the beginning of your study and your study plan will need to be approved by your adviser before you may commence the program. This guarantees a breadth of study and ensures that your course will cover material new to you. The plan can only be modified with your adviser's approval.

Your course selection must satisfy the following requirements:
- a total of 72 credit points
- at least 24 credit points from Tables HI and/or IV
- at most 6 credit points from Table II

Graduate
units of study

Computer
Science

- 24 credit points from Table V - Information Technology Project
- at most 12 credit points from other Departments/Faculties (approval by your supervisor is required).

Note: It is not compulsory that these 12 credit points be made up of units of study from other Departments/Faculties, you may select these credit points from units of study in the Master of Information Technology.

INFO 5000   **Information Systems**
12 credit points
Assumed knowledge: Broad knowledge of computing and business. **Offered:** February, July. **Classes:** 2hrs lec, 4hrs prac & 6hrs private study/wk Total/week 12 1.3 Proposed unit value of course: 12 crpts. **Assessment:** Assignments, essay and/or project, written exam.
NB: Availability of this unit will vary.

COMP 5001   **Algorithms**
6 credit points
Offered: February, July. **Classes: 2** lec **& 1** tut/wk. **Assessment:** Assignments, written exam.
Table 1

COMP 5002   **Artificial Intelligence**
6 credit points
Offered: February, July. **Classes:** 2 lec, 1 tut/wk. **Assessment:** Assignments, written exam.
Table 1

COMP 5003   **Computer Architecture**
6 credit points
Offered: February, July. **Classes:** 2 lec, 1 tut & 2 prac/wk. **Assessment:** Assignments, written exam.
Table 1

COMP 5004   **Computer Graphics**
6 credit points
Offered: February, July. **Classes:** 2 lec, 1 tut/wk. **Assessment:** Assignments, written exam.
Table 1

COMP 5005   **Database Systems**
6 credit points
Offered: February, July. **Classes: 2** lec, **1** tut/wk. **Assessment:** Assignments, written exam.
Table 1

COMP 5006   **Declarative Programming Languages**
6 credit points
Offered: February, July. **Classes:** 2 lec, 1 tut/wk. **Assessment:** Assignments, written exam.
Table 1

COMP 5007   **Networked Systems**
6 credit points
Offered: February, July. Classes: 2 lec, 2 prac/wk. **Assessment:** Assignments, written exam.
Table 1
Practical: The practical aspects of the unit of study are centred around a specially designed network laboratory. Experiments aim to provide hands-on experiences of many essential, but difficult, aspects of networking. The unit of study offers a wide range of experiments, from the network physical layer (RS-232), managing Microsoft Windows Networks, basic Unix administration to programming with sockets, remote procedure calls, to writing client/server applications, Simple Mail Transfer Protocol (SMTP) application.

COMP 5008   **Object-Oriented Systems**
6 credit points
Offered: February, July. **Classes:** 2 lec, 1 tut/wk. **Assessment:** Assignments, written exam.
Table 1

COMP 5009   **Operating Systems**
6 credit points
Offered: February, July. **Classes:** 2 lec, 1 tut/wk. **Assessment:** Assignments, written exam.
Table 1

COMP 5100   **Software Engineering**
6 credit points
Offered: February, July. **Classes:** 2 lec, 1 tut/wk. **Assessment:** Assignments, written exam.
Table 1

COMP 5102   **User Interfaces**
6 credit points
Offered: February, July. **Classes:** 2 lec, 1 tut/wk. **Assessment:** Assignments, written exam.
Table 1

COMP 5201   **Algorithmic Systems Project**
6 credit points
Offered: February, July. Classes: Supervised project. **Assessment:** Quality of software product, written report, product presentation.
Table 2

COMP 5202   **Computer Systems Project**
6 credit points
Offered: February, July. Classes: Supervised project. **Assessment:** Quality of software product, written report, product presentation.
Table 2

COMP 5203   **Intelligent Systems Project**
6 credit points
Offered: February, July. Classes: Supervised project. **Assessment:** Quality of software product, written report, product presentation.
Table 2

COMP 5204   **Large-Scale Software Project**
6 credit points
Offered: February, **July. Classes:** Supervised project. **Assessment:** Quality of software product, written report, product presentation.
Table 2

COMP 5205   **Product Development Project**
6 credit points
Offered: February, July. **Classes:** Supervised project. **Assessment:** Quality of software product, written report, product presentation.
Table 2

INFO 5300   **Information Systems (AdvancedTopic)**
12 credit points
Assumed knowledge: Broad knowledge of computing and business. **Offered:** February, July. **Classes:** 2hrs lec, 4hrs prac & 6hrs private study/wk Total/week 12 1.3 Proposed unit value of course: 12 crpts. **Assessment:** Assignments, essay and/or project, written exam.
NB: Availability of this unit will vary.

COMP 5301   **Algorithms (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5302   **Artificial Intell (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5303   **Comp Architecture (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5304   **Computer Graphics (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5305 **Computer Networks (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5306 **Database Systems (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5307 **Distributed Systems (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5308 **Machine Learning (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5309 **Object-Oriented Systems (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5400 **Operating Systems (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5401 **Software Eng (Adv Topic)**
6 credit points
Offered: February, July.
Table 3

COMP 5402 **User Interfaces (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5403 **Computation Theory (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5404 **Science Visualisation (AdvTopic)**
6 credit points
Offered: February, July.
Table 3

COMP 5601 **Advances in Computer Science 1**
6 credit points
Offered: February, July.
Table 4

COMP 5602 **Advances in Computer Science 2**
6 credit points
Offered: February, July.
Table 4

COMP 5603 **Advances in Computer Science 3**
6 credit points
Offered: February, July.
Table 4

COMP 5604 **Advances in Computer Science 4**
6 credit points
Offered: February, July.
Table 4

COMP 5701 **Information Technology Project**
24 credit points
Offered: February, July.
Table 5

Environmental Science
Graduate Diploma in Science (Environmental Science)

The Resolutions for this award course are outlined in Chapter 8.

Course overview

The Graduate Diploma in Science (Environmental Science) requires 1 year of full-time or two years of part-time study. The major themes addressed in the coursework are: environmental sciences, environmental politics, project evaluation and assessment, decision making and conflict management.

Course outcomes

The Graduate Diploma in Science (Environmental Science) is designed for recent graduates wishing to obtain employment in environmental science. The program is also for graduates already working in a specific area of environmental science (such as analytical chemistry or ecology) who are interested in gaining additional information about related areas of environmental science.

Environmental scientists and managers 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. The aim of the Graduate Diploma in Science (Environmental Science) is to provide students who complete the course 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. Students completing this postgraduate course will have a solid grounding in all basic areas of environmental science, enabling them to understand in a general way the various 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 Diploma in Science (Environmental Science) must have completed a Bachelor of Agricultural Science, Bachelor of Science, Bachelor of Veterinary Science or any other equivalent degree.

Course requirements

The Graduate Diploma consists of coursework to a minimum of 33 credit points, chosen from the subjects below, plus an interdisciplinary research project worth 15 credit points. The availability of each unit of study will vary from year to year and is dependent upon Departmental involvement at that time. Full time students undertake to complete the above requirements in 1 year, while part-time students complete coursework to the value of at least 12 credit points each semester, thus taking 1 to 2 years to complete the Diploma.

Please note: Although some units of study are listed as available in both the February and July semesters they may not be offered in both semesters every year. Please check with the Administrative Coordinator before enrolling.

AGEC 4026 **Introductory Natural Resource Economics**
2 credit points
Offered: February.
Natural Resource Economics provides an overview of the economic analysis of resource use, and its importance to the consideration of many of the environmental problems facing the world today.

ENVI4501 **Interdisciplinary Research Project A**
3 credit points
Offered: February, July.

ENVI 4502 **Interdisciplinary Research Project B**
12 credit points
Offered: February, July.

Graduate units of study

Computer
Science
Environmental
Science

ENVI 4703   Human Ecology
2 credit points
Offered: July.
Human ecology provides a broad perspective through which you can apply your undergraduate field of knowledge. In this unit of study you will study the interrelationships between population, resources environment and development. This unit of study involves 21 contact hours, including talks by guest speakers.

ENVI4705   Introductory Environmental Biology
3 credit points
Offered: February.
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 terms of ecology. This unit of study involves 3 contact hours per week for a semester.

ENVI 4706   Sampling and Techniques for Environmental Monitoring/Assessment
2 credit points
Offered: February.
This unit of study examines the problems of environmental sampling and introduces the statistical bases behind correct sampling regimes. This unit of study involves 4 contact hours per week for one half semester.

ENVI 4707   Environmental Physics
3 credit points
Offered: February.
Environmental impacts of energy generation and use are addressed in this unit of study. Major topics include physics of energy sources, global energy resources, energy economics, politics and culture, solar thermal and photovoltaic energy systems and atmospheric systems. This unit of study involves 3 contact hours per week for one semester and includes several field trips.

ENVI 4708   Introductory Environmental Chemistry
3 credit points
Offered: February, July.
Environmental Chemistry provides the basic chemical knowledge required to be able to understand the chemical analysis of air, water and soil samples taken from the field. This unit of study involves 3 contact hours per week for one semester.

ENVI 4709   Advanced Environmental Chemistry
2 credit points
Offered: February, July.
Advanced Environmental Chemistry provides a more in-depth chemical knowledge, covering aquatic chemistry (the equilibria and dynamics of natural waters), marine chemistry (an introduction to the inorganic chemistry of the sea), mineral chemistry (an introduction to geochemistry), and nuclear chemistry and radiation. This unit of study involves 2 contact hours per week for one semester.

ENVI 4801   Total Catchment Management
4 credit points
Offered: July.
The aims of this unit of study are to develop an advanced understanding of how rivers function and to derive general principles by which rivers and the water they convey should be managed. The unit of study comprises aspects of pure geomorphology, environmental geomorphology, and management. Material covered will include contemporary river management issues such as flow regulation, inter-basic diversions, extractive industries, urbanisation and river engineering, and legislative controls and institutional arrangements for effective river management.

ENVI 4802   Environmental Geology I
3 credit points
Offered: February.
Environmental Geology explores topics such as human-environment interactions, land use and waste management, geologic site investigation, geophysical site investigation, and the principles of ground water flow. This unit of study largely involves the practical analysis of fieldwork samples and the application of acquired environmental knowledge.

ENVI 4803   Environmental Law
4 credit points
Offered: February.
This is an overview unit of study which looks at a number of environmental issues at various levels of analysis, policy making, implementation of policy and dispute resolution. It will provide a broad background of the political and economic issues as they related to the legal issues involved plus a general coverage of all laws in Australia pertaining to environmental matters. This unit of study involves lecture material and an essay on policy issues.

ENVI 4805   The Built Environment and Planning Aspects of the Environment
2 credit points
Offered: February.
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. This unit of study involves 3 contact hours per week for 8 weeks.

ENVI 4807   Environmental Geology II
3 credit points
Offered: July.
Environmental Geology explores topics such as human-environment interactions, land use and waste management, geologic site investigation, geophysical site investigation, and the principles of ground water flow. This unit of study is worth 3 credit points over the semesters, and largely involves the practical analysis of fieldwork samples and the application of acquired environmental knowledge.

ENVI 4808   Advanced Environmental Biology
3 credit points
Offered: July.
This unit of study follows on from Environmental Biology I, and covers in more depth the concerns of modern ecology pertaining to both marine and terrestrial creatures. An understanding of the Threatened Species Conservation Act is also provided.

ENVI 4809   Environmental Modelling
4 credit points
Offered: February.
The aim of this unit of study is to provide the conceptual and practical bases of aspects of modelling which are of particular value to natural resource managers. Importantly, the course is designed for non-programmers, and involves a minimum of 4 contact hours per week.

ENVI 4901   Rock Weathering
6 credit points
Offered: July.
Predominantly physical, chemical and biological weathering processes will be considered in terms of their effectiveness in different rocks and weathering environments. Particular emphasis will be given to solution weathering and its acceleration following environmental acidification; to the weathering of building and monumental stone, and the evidence this provides for establishing weathering rates and understanding processes; and to the use of weathering products like desert varnish as environmental indicators.

ENVI 4902   Environmental Fluvial Geomorphology
6 credit points
Offered: February.
This unit of study demonstrates how geomorphological concepts about rivers and fluvial landscapes can be used to understand and manage environmental problems. Landforms and processes

are both modified by human activities, and the module focuses on problems created thereby.

ENVI4903   **Ancient Environmental Change**
6 credit points
Offered: February.

This is an optional unit of study to be undertaken by those students who have already completed the Environmental Geomorphology module as part of a Senior year Geography unit of study.

Ancient environments deals with the long-term history of the Australian biophysical environment, tracing changes from the start of the Cenozoic up to the present day.

Master of Science (Environmental Science)

Course overview
The Master of Science (Environmental Science) requires the completion of an interdisciplinary research project over 18 to 24 months of full-time study (18 to 48 part-time). This project must have a strong environmental emphasis. Reflecting the philosophy of Environmental Science at the Unversity of Sydney, students are encouraged to extend their knowledge base through further training by the requirement that students also satisfactorily complete 24 credit points from the units of study listed in the Graduate Diploma in Science (Environmental Science).

Course outcomes
The aims of the MSc(EnvironSc) are the same as the Graduate Diploma of Science (Environmental Science), the driving force of which is to enable students to solve environmental problems that require the integration of knowledge from diverse disciplines. The MSc(EnvironSc), like the Graduate Diploma of Science (Environmental Science), is designed for recent graduates wishing to obtain employment in environmental science. Pursuit of this career path requires a background in the environmental science disciplines in addition to the undergraduate degree majors. The program is also suitable for graduates already working in a specific area of environmental science (such as chemistry or geology) who are interested in gaining additional information about related areas of environmental science.

Admission requirements
Students with honours degrees or with a Credit (B+) or better average in their first degree are able to enter directly into the Masters. Other students may enter directly into the Graduate Diploma and apply to transfer into the Masters after they have completed one year of the graduate diploma.

Course requirements
The Master of Science (Environmental Science) is a research degree, requiring the submission of a research thesis in a subject of significant environmental emphasis. In addition to this thesis, students are also required to satisfactorily complete 24 credit points from units of study listed for the Graduate Diploma in Science (Environmental Science)

Course descriptions
As for the Graduate Diploma in Science (Environmental Science), with the addition of the project which is described below.

Research Project
The research project represents one year's full-time work with the work load spread over 2 to 3 semesters for full-time students; special arrangements are made for part-time students. For students already in employment, the research project may be on a project that is related to their work. Other students are expected to select a topic and approach suitable supervisors during their first semester, which under normal circumstances would be mostly course work. A list of suitable topics and supervisors will be supplied to students who do not wish to select their own topic.

Mathematics
Master of Science (coursework)
The resolutions for this course are given in Chapter 8.

Course Overview
The Master of Science by coursework provides further advanced study of mathematics beyond the Honours level to introduce candidates to recent developments in mathematics. The course is ideal for those who wish to undertake further study in mathematics but who are unsure about the area they wish to research. The course also enables those who completed their first degree some years ago to update their mathematical skills. The degree can be completed through full-time study in one year or part-time over a maximum of four years.

Course Outcomes
Upon completion of the course graduates will have studied recent advances in a number of different areas of mathematics and mastered advanced mathematical techniques. They will also have developed the skills necessary to undertake research in mathematics. The successful completion of the M.Sc. degree is one pathway into the PhD program.

Admission Requirements
Applicants must have an Honours degree in Mathematics at first or second class standard or equivalent.

Course Requirements
Candidates must complete 48 credit points for the degree including the four postgraduate coursework units of study (MATH 5001, MATH 5002, MATH 5003 and MATH 5004) worth 6 credit points each. The candidates also complete a research project worth a further 24 credit points under the supervision of a member of the School of Mathematics and Statistics. The research project can be completed in one year full-time by enrolling in MATH 5005 and MATH 5006 or over a maximum of four semesters part-time.

MATH 5001   **Mathematics Option 1**
6 credit points
Offered: February.

MATH 5002   **Mathematics Option 2**
6 credit points
Offered: February.

MATH 5003   **Mathematics Option 3**
6 credit points
Offered: July.

MATH 5004   **Mathematics Option 4**
6 credit points
Offered: July.

MATH 5005   **Research Project A**
12 credit points
Offered: February.

MATH 5006   **Research Project B**
12 credit points
Offered: July.

MATH 5007   **Research Project C**
6 credit points
Offered: February.

MATH 5008   **Research Project D**
6 credit points
Offered: February.

MATH 5010   **Research Project E**
6 credit points
Offered: July.

Graduate units of study

Environmental Science
Mathematics

MATH 5011   Research Project F
6 credit points
Offered: July.

Microscopy and Microanalysis
Graduate Certificate in Science (Microscopy and Microanalysis)

Course Overview
The Graduate Certificate in Science (Microscopy and Microanalysis) provides a professional qualification to microscopists for industry, research and education. The course develops and enhances skills in specimen preparation, operation of microscopes and analytical equipment, maintenance of electron microscopes, interpretation of microscope images and microanalysis. The Graduate Certificate can be completed in 1 semester (full-time) or can be taken part-time.

Course Outcomes
Upon the completion of the Graduate Certificate, graduates will possess a practical and theoretical background in a wide variety of microscopy, microanalysis and specimen preparation techniques for the materials or life sciences.

Admission Requirements
Applicants for the Graduate Certificate should have a Bachelor of Science in the physical sciences, life sciences, computer science, geology, palaeontology or a Bachelor of Engineering, or equivalent qualifications or experience. Applications will also be considered from those with a Bachelor of Arts who wish to acquire microscopy and microanalysis skills for such areas as archaeology, history of art and museum studies.

Course Requirements
Candidates must complete 24 credit points from the following core units:
• MCAN 4001 Principles of Microscopy & Microanalysis
• MCAN 4301 Instrumentation - Introduction to Light Microscopy
• MCAN 4302 Instrumentation - Introduction to Transmission E M
• MCAN 4007 Instrumentation - Monitoring & MaintenanceEM
• MCAN 4303 Instrumentation - Introduction to ScanningEM
• MCAN 4008 Introductory Specimen Preparation for Optical Microscopy
• MCAN 4101 Biological Specimen Preparation - TEM & SEM
• MCAN 4102 Materials Specimen Preparation - TEM & SEM
• MCAN 4105 Optical X-ray & Electron Spectroscopy
• MCAN 4304 Instrumentation - Introduction to Confocal Microscopy
• MCAN 4108 Independent Project & Report

Graduate Diploma in Science (Microscopy and Microanalysis)

The Resolutions for this course are outlined in Chapter 8.

Course Overview
The Graduate Diploma in Science (Microscopy and Microanalysis) provides a professional qualification to microscopists for industry, research and education. The course develops and enhances skills in specimen preparation, operation of microscopes and analytical equipment, maintenance of electron microscopes, interpretation of microscope images and microanalysis. The Graduate Diploma can be completed in 2 semesters (full-time) or can be taken part-time.

Course Outcomes
Upon the completion of the Graduate Diploma, graduates will possess a practical and theoretical background in a wide variety of microscopy, microanalysis and specimen preparation techniques for the materials or life sciences.

Admission Requirements
Applicants for the Graduate Diploma should have a Bachelor of Science in the physical sciences, life sciences, computer science, geology, palaeontology or a Bachelor of Engineering, or equivalent qualifications or experience. Applications will also be considered from those with a Bachelor of Arts who wish to acquire microscopy and microanalysis skills for such areas as archaeology, history of art and museum studies.

Course Requirements
Candidates must complete 48 credit points from the course modules, including 32 credit points of compulsory modules and 16 credit points of optional modules for the materials or life sciences.

MCAN 4001   Principles of Microscopy and Microanalysis
2 credit points
Professor Colin Sheppard
Offered: February, July.
Introduces the general principles of microscopy and microanalysis, and reviews the basic physical principles on which they are based, including optics and image formation. (This is a core unit of study.)

MCAN 4007   Instrumentation - Monitoring and Maintaining Electron Microscopes
2 credit points
Professor Cockayne
Prerequisite: MCAN 4302 or MCAN 4303. Offered: July.
Provides training in monitoring the performance of electron microscopes, and in basic maintenance procedures for transmission and scanning electron microscopes. (This is a core unit of study.)

MCAN 4008   Introductory Specimen Preparation for Optical Microscopy
2 credit points
Dr Ansselin
Offered: February.
Develops knowledge and skills in the fundamentals of specimen preparation for light microscopy. (This is a core unit of study.)

MCAN 4009   Advanced Biological Specimen Preparation for Optical Microscopy
2 credit points
Dr Dibbayawan
Prerequisite: MCAN 4008. Offered: February, July.
Develops knowledge and skills in advanced techniques in specimen preparation for biological and medical applications (eg. histochemistry, fluorescent dyes, autoradiography). (This is an option.)

MCAN 4101   Biological Specimen Preparation - TEM &SEM
4 credit points
Dr Ansselin
Prohibition: May not be counted with MCAN 4102. **Offered:** February, July.
Presents theory and practical skills of routine specimen preparation techniques used in the biological sciences including fixing, embedding, sectioning, drying, coating and staining techniques. (This is a core unit of study.)

MCAN 4102   Materials Specimen Preparation - TEM & SEM
4 credit points
Professor David Cockayne
Prohibition: May not be counted with MCAN 4101. **Offered:** February, July.
Gives practical training in the preparation of a wide range of materials for electron microscopy, including metals, semiconductors, powders, ceramics and thin films, using a wide range of preparation techniques including electropohshing, ion milling, dimple grinding, chemical polishing and cleavage. (This is a core unit of study.)

MCAN4103   Surface Microscopy
2 credit points
Dr Lukins
Offered: July.

This unit of study is concerned with the nature of surfaces and the imaging techniques that can be used to obtain topographical, spectroscopic and structural information about them. Techniques include various scanning probe microscopies (eg. scanning tunnelling microscopy, atomic force microscopy and near-field scanning optical microscopy), optical interference microscopies for surface studies, and surface profilometry. (This is an option.)

MCAN 4104   Signal and Image Processing
4 credit points
Dr Jones
Offered: February, July.

This unit of study covers the nature and processing of signals, concentrating on two dimensional signals represented by images. Emphasis will be on the correct treatment of real data to provide a basis for reliable research. Participants will develop a sound working knowledge of image processing which is based on an understanding of both the strengths and the limitations that are inherent in image data, and the technology applied to it. This will be set in the context of the nature of the analysis which is to follow processing, either human photo-interpretation or machine vision. Topics include: the nature of images and their general characteristics, an overview of image processing and its context in science, nomenclature, characteristics of the human visual system versus machine vision, spatial filtering, image arithmetic, introduction to segmentation, binary image processing, colour spaces, Fourier methods and filters in the frequency domain, and introductory morphological processing. (This is an option.)

MCAN 4105   Advanced Instrumentation - Spectroscopy
4 credit points
Professor Cockayne
Offered: February, July.

Teaches the principles of construction, operation and maintenance of instruments involved in a broad range of spectroscopic techniques. Participants will receive training in the use of instruments measuring electron energy loss spectra (EELS), camodolurninescence spectra and Auger spectroscopy, and in the interpretation of the data. (This is a core unit of study.)

MCAN 4108   Independent Project and Report
4 credit points
Dr Ansselin
Prerequisite: MCAN 4301 and 4302 and 4303 and 4008 and 4102 or 4101. **Offered:** February, July.

Gives students the opportunity to extend the practical work encountered in other modules. Students will choose topics in consultation with members of academic staff and complete project work under supervision. (This is a core unit of study.)

MCAN 4109   Introduction to Diffraction
2 credit points
Professor McKenzie
Offered: February.

Introduces the basics of diffraction theory and its applications to powder diffraction and elementary single crystal diffraction. Participants are trained to collect, process and interpret powder diffraction data using electrons, neutrons and x rays. (This is an option.)

MCAN 4201   Diffraction Techniques - Advanced
2 credit points
Professor McKenzie
Prerequisite: MCAN 4109. **Assumed** knowledge: Assumes mathematic ability including elementary complex numbers and integration. **Offered:** July.

Provides training in advanced structural analysis using X-ray, electron and neutron techniques. (This is an option.)

MCAN 4202   Microanalysis - Electron Techniques
4 credit points
Dr Nockolds
Offered: February, July.

Provides a theoretical introduction and practical training in a broad range of microanalytical techniques which rely on the interaction of electrons with materials, including EDS and WDS techniques, the Electron probe. (This is an option.)

MCAN 4203   Microanalysis for Materials - Non-electron Techniques
4 credit points
DrMcCulloch
Offered: February, July.

This unit of study provides an introduction and some training in a range of materials characterisation techniques. Techniques covered include a range of surface science analytical methods, infra-red and Raman spectroscopy and ion beam analysis techniques. On completion of this unit of study, the student will be aware of the wide range of materials characterisation techniques available and understand their strengths and weaknesses. (This is an option.)

MCAN 4204   Microanalysis in the Life Sciences
2 credit points
Dr Nockolds
Prerequisite: MCAN 4303, 4101 and 4205. Offered: February, July.
Provides an introduction to a broad range of microanalytical techniques which rely on the interaction of electrons with materials including EDS, EELS and cryotechniques. The module concentrates on teaching the skills in techniques commonly required for biological applications. (This is an option.)

MCAN 4205 Advanced Techniques in Biological EM
4 credit points
DrVesk
Prerequisite: MCAN 4302 and 4303 and 4101. **Offered:** February, July.

Develops further the knowledge and skills in biological specimen preparation techniques and image interpretation obtained in Biological Specimen Preparation. Training in specialised techniques including cryotechniques and immunolabelling is provided. (This is an option.)

MCAN 4207   Image Capture and Recording
2 credit points
Dr Jones
Offered: February, July.

This unit of study provides a basic introduction to techniques and instrumentation used for recording images. Topics to be covered in this module include: colour and B/W photographic techniques, video and slow scan image capture, limitations of image recording techniques, electronic storage media, image display, and printing of digital images. (This is an option.)

MCAN 4209   **Stereology**
2 credit points
Dr Ansselin
Prerequisite: MCAN 4207 and 4308. Offered: February, July.
Provides a general overview of stereology, including global, specific, manual and computerised measurements, geometric probability, density estimation and sampling. (This is an option.)

MCAN 4301   Instrumentation - Light Microscopy
4 credit points
Dr Guy Cox
Offered: February, July.

Gives students a basic understanding of the workings of the optical microscope and the practical ability to use it effectively. Polarisation, phase-contrast, dark field, DIC and fluorescence are covered at an elementary level. (This is a core unit of study.)

Graduate units of study

Mathematics
Microscopy &
Microanalysis

MCAN 4302 Instrumentation -Transmission Electron Microscopy

4 credit points
Professor David Cockayne
Offered: February, July.

Trains participants, with no prior knowledge of electron microscopy, to become operators of the transmission electron microscope. Participants are given a practical understanding of the operation and construction of the microscope and how to obtain the optimum performance from it in routine operation. (This is a core unit of study.)

MCAN 4303 Instrumentation - Scanning Electron Microscopy

4 credit points
Dr Clive Nockolds
Offered: February, July.

Trains participants, with no prior knowledge of electron microscopy, to become operators of the scanning electron microscope. Participants are given a practical understanding of the operation and construction of the microscope and how to obtain the optimum performance from it in routine operation. (This is a core unit of study.)

MCAN 4304 Instrumentation - Confocal Microscopy

4 credit points
Dr Cox
Offered: February, July.

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. (This is a core unit of study.)

MCAN 4305 Advanced Instrumentation - Transmission Electron Microscopy

2 credit points
Professor Cockayne
Prerequisite: MCAN 4302. **Offered:** July.

Gives training in advanced imaging and diffraction techniques (including high resolution microscopy), and quantitative analysis in transmission electron microscopy. A basic knowledge of the construction and operation of the microscope (as provided, for example in Instrumentation - Transmission electron microscopy) is assumed. (This is an option.)

MCAN 4306 Advanced Instrumentation - Scanning Electron Microscopy

2 credit points
Dr Clive Nockolds
Prerequisite: MCAN 4303. **Offered:** July.

Gives training in advanced techniques in scanning electron microscopy, including high resolution microscopy. A basic knowledge of the construction and operation of the microscope (as provided, for example in Instrumentation - Scanning electron microscopy) is assumed. (This is an option.)

MCAN 4307 Advanced Instrumentation - Confocal Microscopy

4 credit points
Professor Sheppard
Prerequisite: MCAN 4301 and MCAN 4304. Offered: July.

Provides advanced training in confocal microscopes, and introduction to specialised techniques. (This is an option.)

MCAN 4308 Image Analysis

4 credit points
Dr Jones
Prerequisite: MCAN 4104 and MCAN 4207. **Offered:** February, July.

This unit of study covers techniques which can be applied to images that are directed at extracting quantitative parameters characteristic of the content of the image. Emphasis will be on the application of these techniques to typical problems encountered in microscopy based imaging, but applicability to more general classes of image will also be covered. Participants will develop a sound working knowledge of image analysis which is based on an understanding of both the strengths and the limitations of the techniques of analysis. The context of this unit of study assumes a basic understanding of image processing techniques which may have been applied to images to restore or enhance them prior to analysis. 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 an overview of classification techniques used to discriminate measured objects. (This is an option.)

Master of Science (Microscopy and Microanalysis)

Course Overview
The Master of Science (Microscopy and Microanalysis) by coursework is an extension of the Graduate Diploma in Science (Microscopy and Microanalysis) by the addition of two projects and a long essay which consolidate the skills and knowledge gained through the coursework modules. The MSc can be completed in 3 semesters (full-time) or can be taken part-time (minimum candidature 4 semesters).

Course Outcomes
Upon the completion of the MSc, graduates will possess research skills and a practical and theoretical background in a wide variety of microscopy, microanalysis and specimen preparation techniques for the materials or life sciences.

Admission Requirements
Graduates who hold a Bachelor of Science or Engineering, or who have an equivalent degree or standard of knowledge; or completion of the Graduate Diploma in Science (Microscopy and Microanalysis) at credit level.

Course Requirements
Graduation requires 72 credit points, made up of 48 credit points of coursework taken from the Graduate Diploma in Science (Microscopy and Microanalysis), plus two practical projects (8 credit points each) and a long essay (8 credit points). The 48 credit points of coursework includes 32 credit points of core modules, and 16 credit points chosen from a range of optional modules for the Materials or Life Sciences.

Unit of Study Descriptions
For coursework modules refer to the module descriptions for the Graduate Diploma in Science (Microscopy and Microanalysis). Projects and essays may be chosen or designed according to the interests and needs of the student.

MCAN 5001 **Project 1**

8 credit points
Offered: February, July.

A range of short research projects will be offered to suit the interests and skills of the students. These projects will develop and reinforce the knowledge and skills gained in the coursework component. (This is a core unit of study.)

MCAN 5002 **Project 2**

8 credit points
Offered: February, July.

A range of short research projects to suit the interests and skills of the students will be offered. These projects will develop and reinforce knowledge and skills gained in the coursework component. (This is a core unit of study.)

MCAN 5003 Essay

8 credit points
Offered: February, July.

A wide range of essay topics will be offered. (This is a core unit of study.)

Nutrition and Dietetics

Master of Nutrition and Dietetics

The Resolutions for this award course are outlined in Chapter 8.

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 ttaining 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 Biochemistry and Human Physiology. For example, a student who completed a BSc at Sydney should have studied Biochemistry 2001 and 2002 and Physiology 2001 and 2002. A student who has completed a BMedSc should have studied Biochemistry 2101 and 2102 and BMED 2101 and 2102. 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 $500. 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 Board of Studies in Nutrition and Dietetics, chaired by the Dean of the Faculty of Science.

NTDT 5301   **Nutritional Science**
8 credit points
Offered: February.
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
Offered: February.
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
Offered: February.
The study of methodology for assessing dietary intake and nutritional status.

NTDT 5304   **Principles of Dietetic Practice**
2 credit points
Offered: February.
The study of knowledge and skills of professional dietetic conduct.

NTDT 5305   **Food Service Management**
6 credit points
Offered: February.
The study of food service systems for use in institutions.

NTDT 5307   **Clinical Nutrition & Dietetics**
12 credit points
Offered: July.
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
Offered: July.
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
Offered: July.
The study of counselling and education methods to communicate nutrition to individuals, groups and nations.

NTDT 5310   **Nutrition Research Project**
24 credit points
Offered: February, July.
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
Offered: February, July.
Knowledge gained during the clinical and dietetics framing placement. There are up to 20 weeks of training in dietetic practice in major primary health institutions.

NTDT 5312   **Nutrition & Dietetics Training Placement**
12 credit points
Offered: February, July.
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. Four weeks are usually spent in the community and 10 days in food service administration. Some placement time in the food industry may also be elected.

NTDT 5321   **Nutrition Research Project (full-time)**
24 credit points
Offered: February, July.
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 A**
12 credit points
Offered: February, July.

Graduate units of study

Microscopy &
Microanalysis
Nutrition &
Dietetics

This unit of study is for part-time students upgrading from the DipNutrDiet to the MNutrDiet, and it involves completing a research project.

NTDT 5323 Nutrition Research Project B
12 credit points
Offered: February, July.
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
The Resolutions for this award course are outlined in Chapter 8.

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, Upid biochemistry, infant nutrition or ecological research.

Course outcomes
Upon completion of the course the graduate will have a sound knowledge base in nutritional science and possess the skills to conduct nutrition research projects.

Course requirements
First year: The first year coursework and practicals coincide with mose for MNutrDiet with the exception of the units of study NTDT 5306, NTDT 5315, NTDT 5313 and NTDT 5314 listed below.

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.

Unit of study descriptions
First Year: As listed under first year for Master of Nutrition and Dietetics (above).

Admission: Applicants must have a degree from a recognised institution and have completed two full semesters in Biochemistry and Human Physiology. However, the requirement for 2nd 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.

NTDT 5306 Introduction to Food Service
3 credit points
Offered: February.
An introduction to food service systems in institutions.

NTDT 5315 Scientific Methodology in Nutrition
3 credit points
Offered: February.
A small report on the desired area of research in year 2.

NTDT 5313 Nutritional Science Research A
24 credit points
Offered: February.
Students have a range of areas to choose from for their research year, e.g. sports nutrition, Upid biochemistry, infant nutrition or ecological research.

NTDT 5314 Nutritional Science Research B
24 credit points
Offered: July.

Psychology
Graduate Diploma in Science (Psychology)
The Resolutions for this award course are outlined in Chapter 8.
Description
In addition to the Resolutions of the Faculty governing the Graduate Diploma in Science and other graduate diplomas which may be found in the University of Sydney Calendar, 1998 Vol. 1, Statutes and Regulations, the following appUes, from 1999, to the Graduate Diploma in Science (Psychology):
Eligibility for admission
1.(1) The Faculty of Science, on the recommendation of the appropriate Interdepartmental Committee, may admit to candidature tie following:

(d) Graduate Diploma in Science (Psychology) an apphcant who is a holder of a Bachelors degree with an APS accredited major in Psychology within the past 10 years from a recognised tertiary institution and has achieved a minimum of Credit average in senior (fliird) year units of study which includes a unit in statistics/research methods which meets the requirements of the Department.
Award Course ovei-view
The Graduate Diploma in Science (Psychology) is an Honours equivalent (in the terms used by the AustraUan 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 wiU have a sound background in significant issues in general and appUed psychology, an understanding of research methodology in both experimental and field studies contexts, be capable of finding and assessing relevant research Uterature, be eUgible to apply for further programs of study in psychology and be prepared to undertake supervised training in certain professional areas of psychology.
Course requirements
The program involves attending lectures and seminars in six units and completing a research project. The compulsory (core) units in addition to the Research Project are Psychological Research Memods, Ethics & Current Issues in Psychology and a Special Fields Seminar. The optional units offered in 2000 are: Abnormal Psychology, Counselling Psychology (I), Counselling Psychology (IT), Health Psychology and Psychology of Addiction. A fuU-time load will require 3 days of attendance per week. Part-time candidates wiU complete the Research Project and Psychological Research Methods in their first year.
Entry to other postgraduate programs
Students who have completed the Graduate Diploma are eUgible to apply for fifth and sixth year university programs in Psychology.
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 tlie candidate fails either the Research Project or one other component, permission may be granted for the candidate to repeat that unit the foUowing year.

PSYC 4711 Psychological Research Methods
5 credit points
Offered: February.
A series of lectures and tutorials on topics which include research ethics, experimental design, statistical analysis and field research methods. Contribution: 10% of total mark.

PSYC 4712 Ethics and Current Issues in Psychology
5 credit points
Offered: July.

A series of lectures covering ethical and professional issues in psychology, as well as more general issues such as the relationship between academic research and applied psychology. Contribution: 10% of total mark.

PSYC 4713 Abnormal Psychology
5 credit points
Offered: July.

This unit of study addresses classification, epidemiology and aetiology of major diagnostic psychopathologies. Both assessment and treatment issues are considered from a behavioural and cognitive-behavioural orientation. Contribution: 10% of total mark.

PSYC 4714 Counselling Psychology I
5 credit points
Offered: February.

Lectures, seminar papers and discussions centred on selected audio and visual aids, role plays and demonstrations. The main aim of the course is to examine critically the theoretical foundations of counselling processes and to consider relevant empirical research. Contribution: 10% of total mark.

PSYC 4715 Special Fields Topic
5 credit points
Offered: February.

This consists of 8 research seminar areas: Cognitive Processes, Developmental, Individual Differences, Learning, Neuroscience, Perception, Social Psychology and Theory & Systems, which are offered as part of the Psychology Honours program. Students may participate in one of these seminar courses as a Graduate Diploma elective. Contribution: 10% of total mark.

PSYC 4716 Health Psychology
5 credit points
Offered: July.

This addresses theoretical and empirical issues associated with a number of health and medical conditions. Discussion includes issues such as definition and scope of health psychology, health beliefs, compliance with medical regimens, risk perception and risk taking, and the conceptualisation of stress. Contribution: 10% of total mark.

PSYC 4717 Counselling Psychology II
5 credit points
Prerequisite: PSYC 4714. **Offered:** July.

The weekly meetings consist of lectures, seminar papers, and discussions centred on selected audio and visual aids, role plays and demonstrations. The main aim of the course is to extend the coverage of the Semester 1 course into specific areas of counselling. Contribution: 10% Of total mark.

PSYC 4718 Psychology of Addiction
5 credit points
Offered: February.

This deals with addiction from two perspectives. The first is primarily biological, focusing on biological, pharmacological, genetic, sociopolitical and clinical aspects of addiction to psychoactive drugs. The second is primarily social, focusing on conceptual issues in defining addiction and the extent to which the notion of addiction can be extended validly to include excessive behaviours that do not involve drugs. Contribution: 10% of total mark.

PSYC 4710 Research Project A
9 credit points
Offered: February, July.

In this year long component students complete an individual research project under supervision of a member of the academic staff. An 8000 word report is assessed by at least two independent examiners. Contribution: 40% of total mark.

PSYC 4720 Research Project B
9 credit points
Offered: February, July.

See description under Research Project A (PSYC 4710) above.

Master of Psychology (MPsych)
The Resolutions for this award course are outlined in Chapter 8.

Course oveiyiew
The course requires two years of full time study and takes a scientific and evidence-based approach to clinical psychology. Just under half of the program is formal academic teaming with a similar amount of practical experience. The research project takes the equivalent of one day per week in the first year and two days per week in the second year.

Course outcome
The MPsych program provides a postgraduate qualification in clinical psychology recognised by the New South Wales Departments of Health, Corrective Services and Department of Community Services as qualifying the holder for progression to the grade of Clinical Psychologist after two years paid employment. The course is accredited by the Clinical College of the Australian Psychological Society and by the NSW Psychologists Registration Board.

Admission requirements
Applicants should possess a good honours degree in Psychology from a course which has included a research thesis and a major course in abnormal psychology. Exceptional students with Graduate Diplomas may be considered. Interviews with the Clinical Psychology staff are required for admission (contact the Department of Psychology).

Course requirements
The Master of Psychology requires two years of full-time. The course is divided into two parts.

PART I of the course includes study in the following areas:
• adult therapy
• child therapy
• therapy skills
• abnormal psychology
• psychological assessment
• applied psychometrics
• behavioural assessment
• psychosis
• neuropsychology
• psychopharmacology
• disabilities and behavioural medicine
• addictive behaviours
• professional practice
• research methods.

PART I also includes practical teaming & clinical placement.

PART II of the course consists of a lecture/tutorial program on options selected by the student. The options normally include advanced training in child clinical psychology, clinical neuropsychology and behavioural medicine. Students also attend lectures on core material, and attend case discussions. In addition, numerous workshops which focus on advanced therapeutic interventions are available to students.

During PART II students are required to attend clinical placements for 2 days per week during the semester and short vacation and 3 days per week in the long vacation.

Some details of the course arrangements and requirements are as follows:
1. Candidates for the degree are required to complete satisfactorily -
   (a) a coursework component according to the syllabus approved by the Faculty of Science;
   (b) a practicum component involving both training in therapeutic and assessment techniques and field placements;
   (c) a research project and a dissertation on that project.
2. (a) The requirements for the degree shall be completed in two parts; and Part I must be satisfactorily completed before Partn.
   (b) Candidates are required, except with the permission of the Faculty, to complete the requirements of Part I of the course within one year of first enrolment and to complete Part II of the course within two years of first enrolment.

Graduate units of study

Nutrition & Dietetics
Psychology

PSYC 5003 **Applied Psychometrics**
2 credit points
Offered: February.

PSYC 5004 **Psychosis**
3 credit points
Offered: February.

PSYC 5007 **Neuropsychology 1A**
3 credit points
Offered: February.

PSYC 5008 **Disabilities, Psychogeriatrics and Rehabilitation**
4 credit points
Offered: July.

PSYC 5009 **Child Clinical Psychology**
3 credit points
Offered: February.

PSYC 5101 **Neuropsychology 1B**
3 credit points
Offered: July.

PSYC 5102 **Psychophysiology and Behavioural Medicine**
3 credit points
Offered: July.

PSYC 5103 **Psychopharmacology**
3 credit points
Offered: February.

PSYC 5104 **Professional Practice**
2 credit points
Offered: July.

PSYC **51**05 **Addictive Behaviours**
2 credit points
Offered: February.

PSYC 5106 **Research Thesis A**
6 credit points
Offered: February.

PSYC 5107 **Assessment Placement**
6 credit points
Offered: July.

PSYC 5108 **Therapy Placement**
6 credit points
Offered: July.

PSYC 5109 **Family, Couple and Sex Therapy**
4 credit points
Offered: July.

PSYC 5201 **Option 1**
4 credit points
Offered: February.
Choice between Child Neuropsychology 2 and Child Health Psychology.

PSYC 5202 **Option 2**
4 credit points
Offered: July.
Choice between Behavioural Medicine 2 and Neuropsychology 2.

PSYC 5203 **Clinical Placements A**
6 credit points
Offered: February.

PSYC 5204 **Case Discussions A**
6 credit points
Offered: February.

PSYC 5205 **Case Discussions B**
6 credit points
Offered: July.

PSYC 5206 **Clinical Placements B**
6 credit points
Offered: July.

PSYC 5207 **Research Thesis B**
6 credit points
Offered: July.

PSYC 5208 **Adult Therapy**
3 credit points
Offered: February.
(Includes Abnormal psychology & cognitive behavioural assessment & cognitive behavioural therapy)

PSYC 5209 **Assessment Methods in Psychology**
5 credit points
Offered: February.

Other Faculty information

This chapter is concerned specifically with the Faculty of Science. For further details about the University (its organisation, examinations, child care facilities, assistance for disabled students, housing, health, counseling, financial assistance, careers advice and a range of other matters) see the separate publication University of Sydney Diary, available free from the Student Centre or from University of Sydney Union outlets.

Undergraduate scholarships & prizes

This handbook contains simplified details of some of the prizes and scholarships offered by the University. For full details you are advised to consult the Scholarships Office. The scholarships and prizes may be scheduled as follows:

Prizes awarded automatically on results: Successful students are notified of these by the Records Services section.

Prizes awarded on application: Closing dates for these may be obtained from the Scholarships Office.

Prize or Scholarship	Value $	Qualifications
Scholarships awarded by the Faculty to students entering first year		
University of Sydney Distinguished Undergraduate and Undergraduate Scholarships	8000 pa 5000 pa	UAI of 98 or above for Distinguished or UAI of 95 or above for Undergraduate Scholarships. Awarded on the basis of academic merit and other achievements, applications (through the Scholarships Office) close 30 September. Up to 4 yrs, 5 yrs for BSc/LLB.
Biology Entry Scholarships (2)	2000 each	Awarded automatically on the basis of academic merit in the HSC to intending BSc Biology majors. Cannot be held with other scholarships of greater or equal value.
Chemistry Entry Scholarships (2)	2000 each	Awarded automatically on the basis of academic merit in the HSC to intending BSc Chemistry majors. Cannot be held with other scholarships of greater or equal value
Computer Science and Technology Scholarships (2)	2000	Awarded automatically on the basis of UAI to students entering the BCST. Cannot be held with other scholarships of greater or equal value
Geography Entry Scholarship	2000	Awarded automatically on the basis of academic merit in the HSC to intending BSc Geography major. Cannot be held with other scholarships of greater or equal value
Environmental Science Scholarship	2000	Awarded automatically on the basis of UAI to students entering the BSc (Environmental). Cannot be held with other scholarships of greater or equal value
Farrand Scholarship (6)	2500	Full-time first year BSc student who has not undertaken previous tertiary study. Awarded automatically on the basis of academic merit in the HSC (or equivalent).
Liberal Studies Scholarship	2000	Awarded automatically on the basis of UAI to students entering the BLibStudies Cannot be held with other scholarships of greater or equal value
Liversidge Scholarships (2)	Up to 800 pa each for 3 years	Chemistry (1901 & 1902) or (1903 & 1904) or (1101 & 1102) student who in the immediately preceding year, achieved the highest number of marks in HSC 4 chemistry. (Awarded automatically.)
Mathematics Entry Scholarships (2)	2000 each	Awarded automatically on the basis of academic merit in the HSC to intending BSc Mathematics majors. Cannot be held with other scholarships of greater or equal value
Medical Science Scholarships (2)	2000	Awarded automatically on the basis of UAI to students entering the BMedSc. Cannot be held with other scholarships of greater or equal value
Molecular Biology and Genetics Scholarship	2000	Awarded automatically on the basis of UAI to students entering the BSc (Molecular Biology and Genetics). Cannot be held with other scholarships of greater or equal value.
Physics Entry Scholarships (2)	2000 each	Awarded automatically on the basis of academic merit in the HSC to intending BSc Physics majors. Cannot be held with other scholarships of greater or equal value
Plumian Scholarship	400 pa for 2 years	Awarded automatically for general proficiency at the HSC to a student enrolled in Biology, Geology or Geography in the candidate's first year.
Psychology Scholarships (2)	2000 each	Awarded automatically on the basis of UAI to students entering the BPsych. Cannot be held with other scholarships of greater or equal value
A. J. Shearsby Prize	100	Junior Geology student gaining the highest place in HSC 2 unit Geology (Awarded automatically).

Prize or Scholarship	Value $	Qualifications
Science Alumni Achievement Scholarships (7)	1000 pa for 2 years	Awarded on the basis of academic merit and other achievements to applicants of the University of Sydney Undergraduate and Distinguished Undergraduate Scholarships who do not obtain one of these scholarships Minimum UAI 94. Cannot be held with other scholarships of greater or equal value.
Science Alumni Entry Scholarships (6)	1000 pa for 2 years	Awarded to highly ranked Distinguished Undergraduate and Undergraduate applicants. Minimum UAI 97
Science Entry Scholarships (6)	2000	Awarded to highly ranked Distinguished Undergraduate and Undergraduate applicants. Minimum UAI 97
Science Scholarship for Academic Excellence	2000	Awarded automatically, after enrolment, to students with a UAI of 100.
Science Scholarships (10)	500 each	Awarded automatically to full-time first year BSc students for academic merit in the HSC (or equivalent) who have not previously undertaken tertiary study.

Scholarships awarded by the Scholarships Office to students entering first year in any Faculty

James Aitken Scholarships (3)	500 for 3 years	Awarded automatically after enrolment for general proficiency in the HSC.
Barker Scholarship No.m	600	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, Science or Engineering
A. P. Elkin Fund	varies	Awarded to students of Aboriginal descent.
Council of Education Scholarship	500 pa for 3 years	General proficiency in the HSC for children of teachers or officers in the of at least three years' standing in the NSW Department of School Education or NSW TAFE Commission. Certificate of eligibility required. Application is required and available from Scholarships office in April each year.
Fairfax Prize	1250	Awarded automatically, after enrolment, to most proficient female candidate at HSC.
Freemasons' Scholarship	800 pa for 3 years	General proficiency in the HSC or first year results for children of Freemasons of five years' standing of the United Grand Lodge of NSW. Certificate of eligibility required. Application is required and available from Scholarships office in April each year.
Grahame Prize Medal	250	Awarded automatically after enrolment for general proficiency in the HSC.
Speri Gravas Scholarship	350	Examination proficiency other than final year; for student whose parents or grandparents are or were of Greek nationality. Application is required and available from Scholarships office in April each year.
Horner Exhibition	500	Awarded automatically after enrolment for proficiency in Mathematics at HSC; must enrol in 12 credit points of Junior Mathematics in the Faculties of either Arts, Science or Engineering. (Cannot be held with two other University scholarships.)
Organ Scholarship	500	For student enrolling in any degree after matriculation; must sit for audition; may be asked to perform at recitals or University functions. Awarded for one year (may be renewed for second year.) Application is required and available from Scholarships office in April each year.
Queen Victoria Scholarship	650 pa for 3 years	Awarded automatically, after enrolment, to the most proficient female candidate in the HSC; must also demonstrate financial need.
James Robinson Orange Memorial Prize	1500	General proficiency in the HSC for children or grandchildren of members of the Loyal Orange Institution. Certificate of eligibility required. Application is required and available from Scholarships office in April each year.
Sun Microsystems Scholarships (5)	1000 pa for 4 years	Awarded automatically to students intending to complete Honours in Computer Science or Mathematics and enrolling in either the BSc(Arch), BE(Elec), BE(Comp), BE(Telec), BSc or BCST. Minimum UAI 98.
E Trenchard Miller Memorial Scholarships (8)	500 pa	Awarded automatically, after enrolment, for general proficiency in the HSC
John West Medal	400	Awarded automatically after enrolment for general proficiency in the HSC.

Other Scholarships awarded by the Faculty (all awarded <automatically)

Brian Rawson Memorial Prize	250	Most improved performance from Junior to Intermediate Science.

Prize or Scholarship	Value $	Qualifications
Dean's Honour List Prize	500	Awarded to the candidates on the Dean's Honour List who achieve the highest weighted average mark of all candidates in their first, second and third year of study respectively.
Dean's Scholarships in Science	varies	On the basis of merit to candidates enrolled full-time for degrees in the Faculty who have completed between two and six semesters of study and are not holders of a University Alumni, Distinguished or Undergraduate Scholarship.
Dean's Honour List Prize	varies	Highest WAM of all candidates in first, second and third years of study
Helen Ben Award for Citizenship	200	Annually on the recommendation of a selection committee to a full-time student in any undergraduate course offered by the Faculty who has, contributed most to the Faculty's non-academic activities and interests.
Science Achievement Prize	500	Highest WAM for all units of study to a student completing the requirements for a Faculty degree in six semesters.
University of Sydney Staff Prize	Texts to value $300	On Academic merit to full-time candidates in an award course of the Faculty.

Other Scholarships awarded by other institutions

Australian Coal Association (closes mid January)	600-1200	In Mining, Mechanical or Electrical Engineering, or Geology. Applications to GPO Box 2668, Sydney 2001.
Joint Coal Board (closes mid-January)	700-1200	In Mining Engineering or Geology. Applications to; The Secretary, Joint Coal Board, GPO 3842, Sydney 2001. Graduates to work in coal mining or related fields.

Both Undergraduates and Postgraduates

Henry Chamberlain Russell Prize	250-1400	Essay, thesis or research report on Astronomy.

Bursaries

AusJMM Mining and Metallurgical Bursaries	600	Best Intermediate, Senior and Honours students in a Geoscience, Mining or Extractive Metallurgical Department in NSW or ACT
Robert Campbell	500 pa	Students in financial need and of sufficient merit. (Applications from Year 1 students to be lodged with the Financial Assistance Office in March each year.)
Lily Lonnie Boot Bursary	1000 pa for up to 3 years	Available to undergraduate students enrolled in the Faculties of Medicine and Science who are supporting themselves while studying for their degree. Application is required and available from the Financial Assistance Office in March each year.
Norman John Dunlop Bursaries	Up to 2000	Available to undergraduate students enrolled in the Faculties of Medicine and Science who require financial assistance to meet student expenses and have demonstrated academic merit, and are of British parentage and Protestant faith
Roy Lindseth Bursary	180	Undergraduate student in Computer Science.

Scholarships awarded by Departments

Biochemistry

Amrad Pharmacia Award in Experimental Biochemistry	250	Most outstanding student in Senior Biochemistry practical.
Amrad Pharmacia Award in Molecular Biology	400	Most outstanding Honours thesis in Molecular Biology to a student proceeding to a PhD in Biochemistry.
Amrad Pharmacia Award in Protein Chemistry	400	Most outstanding Honours thesis in Protein Chemistry to a student proceeding to a PhD in Biochemistry.
Biochemistry Alumni Award	250	Merit in Senior Biochemistry to a student proceeding to Biochemistry Honours.
G.S. Caird Scholarship	650	Proficiency in Intermediate Biochemistry to a student proceeding to Senior Biochemistry.
HNU Award		Awarded by the Sydney University Nutrition Research Foundation to the fourth year Honours thesis on nutrition which is awarded the highest marks in the Department of Biochemistry
Johnson & Johnson Awards (2)	250	Merit in Intermediate Biochemistry practical to a student proceeding to Senior Biochemistry.
Roslyn Flora Goulston Prize	530	Distinction in Senior Biochemistry to a student proceeding to Biochemistry Honours.
Slade Prizes (6)	80	Proficiency in practical classes in Intermediate Chemistry, Geology, Biochemistry, or Junior Geography or Biology.

Biological Sciences

Collie Prize	160	Highest aggregate mark in Junior Biology.

Prize or Scholarship	Value $	Qualifications
E. N. (Ted) O'Reilly Memorial Prize	275	Merit in Senior Plant Physiology.
Eleanor Chase Memorial Prize	200	Merit in Biology 2001 and 2002 or 2901 and 2902
Eva Saunders Memorial Prize	60	To a female student for merit in Intermediate or Senior Plant Sciences
G.S. Caird Scholarship in Botany	650	Merit in Senior Plant Sciences to a student proceeding to Honours.
G.S. Caird Scholarship in Zoology	650	Merit in Senior Zoology to a student proceeding to Zoology Honours.
Gabriella Wittman Prize	140	Proficiency in Genetics in Senior Biology.
George Herbert Clarke Prize	100	Merit in Intermediate Plant Morphology to a student born in Australia.
Haswell Prize	120	Proficiency in 24 credit points of Senior Zoology.
lima Brewer Prize	300	Excellence in Honours Botany or Plant Sciences.
John H. Elliott Memorial Prize	150	Best BSc(Hons) thesis in Animal Biology.
Mary Besly Memorial Prize	100	Merit in Intermediate or Senior Invertebrate Zoology.
Professor Spencer Smith-White Prize	200	Proficiency in Generics Honours.
William John Dakin Memorial Prize in Zoology	250	Greatest proficiency in First Class Honours in Biology.

Chemistry

Prize or Scholarship	Value $	Qualifications
Agnes Campbell Honours Prizes	Up to 4000	For excellence in Organic Chemistry
Arthur Hollis Memorial Prize	150	Merit in Intermediate Organic Chemistry
C. H. Wilson Prize	70	Highest grade in Organic Chemistry Honours.
Charles E. Fawsitt Prize	120	For merit in Junior Chemistry.
Edna Maude Goulston Prize in Organic Chemistry	275	Merit in Organic Chemistry Honours.
Frank E. Dixon Scholarship	650	Merit in Senior Chemistry.
G.S. Caird Scholarships (3)	800	Merit in Senior Chemistry to students proceeding to Chemistry Honours.
Hush Prize in Theoretical Chemistry	350	Merit in Senior Theoretical Chemistry.
Inglis Hudson Scholarships (3)	150 x 2 300 x 1	Merit in Senior Science for students proceeding to Organic Chemistry Honours.
Iredale Prize	95	Merit in Intermediate Physical Chemistry.
Janet Elspeth Crawford Prize in Chemistry	1400	To a female graduate for merit in Honours in Chemistry.
Levey Scholarship (Major)	525	Merit in Junior Chemistry for a student proceeding to Intermediate Chemistry.
Levey Scholarship (Minor)	300	Merit in Junior Chemistry for a student proceeding to Intermediate Chemistry.
Slade Prize	80	Proficiency in practical component of both February and July Semester Intermediate units of study
Walter Burfitt Scholarship No. 1	750	Merit in Senior Chemistry to a student proceeding to Chemistry Honours.

Computer Science

Prize or Scholarship	Value $	Qualifications
CISCO Prize	500	Merit in COMP 3007.
G.S. Caird Scholarship	650	Merit in Intermediate Computer Science.
Ian Jackson Memorial Prize	50	Merit in Senior Computer Science.
Foundation for Information Technology Prize	300	Merit in Junior Computer Science.
Foundation for Information Technology Prize	200	Merit in Junior Computer Science.
Professor John Rosenberg Prize for Excellence in Computer Science	550	For most outstanding performance in Senior Systems units of study

Geography

Prize or Scholarship	Value $	Qualifications
G.S. Caird Scholarship	650	Proficiency in Senior Geography
Edgar Ford Memorial Scholarship	275	Proficiency in Senior Geography, Geomorphology and Environmental Geography to a student proceeding to Geography Honours.
Professor James Macdonald Holmes Prize	20	Merit in Junior Geography units of study.
Rev. A. S. McCook Memorial Scholarship	700	Proficiency in Senior Geography, to a student proceeding to Geography or Geomorphology Honours.
Slade Prize in Junior Geography	80	Proficiency in Junior Geography practical.
Professor Griffith Taylor Prize	50	The female student with highest marks in Junior Geography.
W.H. Maze Prize	250	Proficiency in Intermediate Geography.

Geological Sciences

Prize or Scholarship	Value $	Qualifications
AusIMM Charle Marshall Thesis Prize	1000	Best Honours thesis in a Geoscience, Mining or Extractive Metallurgical Engineering Department in NSW and ACT
C. E. Marshall Scholarship	525	Merit in Junior Geology.
CRAE Mapping Prize	250	Proficiency in Senior Mapping.

Prize or Scholarship	Value $	Qualifications
CRAE Ore Deposits Prize	150	Proficiency in Senior Ore Deposit/Economic Geology.
Deas-Thomson Scholarship in Geology	6500	Proficiency in Geology Honours to a student proceeding to postgraduate Geology.
Deas-Thomson Scholarship in Mineralogy	1000	Merit in Senior Geology to a student proceeding to Honours.
Earth Resources Foundation Honours Year Scholarships (2)	1000	Proficiency in Senior Geological Sciences.
Earth Resources Foundation First Year Scholarships (4)	600	Merit in February semester Junior Geology.
Earth Resources Foundation Second Year Scholarships (4)	800	Proficiency in Junior Geology.
Earth Resources Foundation Third Year Scholarships (3)	1000	Proficiency in Intermediate Geology/Geophysics.
Edgeworth David Prize for Palaeontology	60	Proficiency in Senior Palaeontology.
Elliston Medal	medal	Proficiency in Economic Geology, Igneous Petrology, Metamorphic Petrology or Sedimentology Honours.
Geo Instruments Prize	1000	Best overall Senior student in Geophysics.
Geological Society of Australia Prize		Merit in Senior Geology to a student proceeding to Honours.
Jack Mahoney Memorial Prize	90	Junior Geology practical.
Ken Richard's Memorial Scholarship	1250	For Geological Science Honours.
L. A. Richardson Memorial Prize	3000	Best Honours thesis in Geology or Geophysics to a student proceeding to postgraduate research in Geology or Geophysics
Leo A Cotton Prize in Exploration Geophysics	80	Proficiency in Intermediate Exploration Geophysics
Quodling Testimonial Prize	200	Proficiency in Senior Petrology.
Sheila Mitchell Swain Memorial Prize	210	Senior Geological Science field report.
University Prize for Geology	10	Proficiency in Junior Geology.
Western Mining Corporation Prize	300	Most outstanding Senior student in Resource Exploration.

History and Philosophy of Science

Dr G.A.M. Heydon Prize	60	Proficiency in Intermediate History and Philosophy of Science.
Ian Langham Memorial Prize	150	Proficiency in Senior History and Philosophy of Science.
Marine Sciences		
Prize in Marine Sciences	100	Proficiency in Senior Marine Sciences units of study.

Mathematics and Statistics

Australian Federation of University Women (NSW) in Mathematics	100	Merit in Mathematics or Statistics Honours by a female Prize graduate.
Barker Prize	375	Merit in Mathematics or Statistics Honours.
Barker Scholarship, No. I	600	Merit in Intermediate Mathematics to a student proceeding to Senior Mathematics.
Barker Scholarship, No. II	600	Merit in Junior Mathematics to a student proceeding to Intermediate Mathematics.
George Allen Scholarship (3)	400	Merit in Senior Mathematics and Statistics to students proceeding to Honours.
K.E Bullen Scholarships Nos. I & II	1250	Merit in Senior Mathematics by a student proceeding to full-time Honours in Applied Mathematics
K.E. Bullen Scholarship No. HI	1000	Merit in Senior Mathematics by a female student proceeding to full-time Honours in Applied Mathematics.
K.E. Bullen Memorial Prize	650	Merit in Applied Mathematics Honours.
Norbert Quirk Prizes (4)	130	Best essay in each of Junior, Intermediate, Senior and Honours years.
Statistical Society of Australia (NSW Branch) Prize in Mathematical Statistics	200	Merit in Statistics Honours.
The M.J. and M. Ashby Prize for Mathematics in Science	250	Best Honours essay in the School.
Tim Brown Prize No. 1	130	Merit in Intermediate Statistics.
Tim Brown Prize No. 2	210	Merit in Senior Statistics.
Veronica Thomas Prize	100	Proficiency in STAT 1021 and 1022
Wadsworth Publishers Prize (book vouchers)	125	Merit in Junior Mathematics.

Medical Oncology

Medical Oncology Scholarship	1000	Honours research in Cancer Biology.

Medical Sciences

Korner Prize	100	Proficiency in the core units of study within the second year of the BMedSc.
P. 0. Bishop Medal	200	Proficiency in BMedSc Honours
Y.E. Knight Neuroscience Essay Prize (subject to approval)	100	For the best short essay (2000 word Umit) with diagrams and references, on a current topic of Neuroscience research

Microbiology

Sydney Chinese Association Prize	100	Proficiency in Senior Microbiology or Agricultural Microbiology.

Prize or Scholarship	Value $	Qualifications
Pharmacology		
Roland H. Thorpe Prize	200	Proficiency in Senior Pharmacology.
Dorothy Thorpe Prize		
Pharmacy		
Guild Insurance Company Limited Prize	100	Merit in Forensic Pharmacy.
Pamela Frances Anderson Prize	110	Merit in Pharmacology 3A and 3B
Pharmaceutical Society of New South Wales Prizes (4)	Approx. 70	Merit in First, Second, Third and Fourth year BPharm.
Walter Noel Gillies Scholarship in Pharmacy	1000	Merit in First Year of BPharm.
William Joseph Collect Shoppee Prize	90	Merit in Pharmaceutical Chemistry (Advanced).
Physics		
The Cadbury - Julius Sumner Miller Scholarships for		
Academic Excellence (No 1) (2)	700	Merit in Junior Physics.
(No 2) (2)	800	Merit in Intermediate Physics.
(No 3) (2)	900	Merit in Senior Physics.
Australian Institute of Physics (NSW Branch) Prize in Physics	200	Merit in Physics Honours.
Deas-Thomson Scholarship in Physics	6500	Merit in Senior Physics.
Geoffrey Builder - AWA Prize	250	Merit in Intermediate experimental Physics
Levey Scholarships No 1	825	Merit in Junior Physics.
Science Foundation for Physics Scholarships		
No 1 (5)	700	Merit in Junior Physics.
No 2 (5)	800	Merit in Intermediate Physics.
No 3 (5)	900	Merit in Senior Physics.
Smith Prize	200	Merit in Junior experimental Physics.
The Smroki Prize	500	Merit in Physics Honours.
W.I.B. Smith Prize	300	Merit in Senior experimental Physics.
Walter Burfitt Scholarship No. II	750	Merit in Senior Physics.
Malcolm Turki Memorial Scholarship	1500	Merit in Senior Physics and financial need, to a student entering Honours Physics
Physiology		
David J. Monk Adams Award	600	Travel grant for Honours candidate.
Claude Bernard Prize	150	Proficiency in the unit of study Heart and Circulation
Colin Dunlop Prize	100	Best performance in Physiology Honours.
Fred Cotton Memorial Prize	150	Proficiency in Physiology
Psychology		
Australian Psychological Society Prize in Psychology	200	Merit in Fourth Year Psychology.
Blanka Buring Prize	400	Merit in Senior Psychology (Arts or Arts/Science students only).
Dick Thomson Prize	60	Merit in Psychology 4 Honours.
Frank Albert Prize in Psychology	70	Merit in Intermediate Psychology.
Lithgow Scholarship, No. V	650	Merit in Junior Psychology.
Lithgow Scholarship, No. VI	650	Merit in Intermediate Psychology.
Lithgow Scholarship, No. VII	650	Merit in Senior Psychology.
O'Neil Prize in Psychology 4 Honours	100	Merit in Psychology 4 Honours theoretical thesis.

Prize compositions

Details of these may be obtained from the Scholarships Officer with whom applications generally close in the third week of second semester. This Handbook contains simplified details of some of the prizes, scholarships and awards offered by the University. Candidates should consult the Scholarships Office and the University's Calendar for full details. Note that additional criteria are attached to the above awards. In particular, requirements of sufficient merit or of higher year enrollment in particular subjects or degrees are common. *The University may not offer an award every year. The values of awards listed in Chapters 6 and 7 of this Handbook are indicative only and may vary without notice.*

Bursaries

Bursaries are awarded on the combined grounds of financial need and academic merit and application may be made at any time to the Financial Assistance Office.

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 eight 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.

Three of the eight 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 Association, the Sydney University Pharmacy Association 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 *Statutes and Regulations 1994-95*.

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

Map Collection

The Map Collection within the Division of Geography in the Madsen Building is open to all faculties and departments in the University. The collection offers world coverage with 45 complete topographic series produced by agencies within the various countries, together with geological, regional, thematic and specialist maps. There are also a number of maps of historic interest. Atlases are held in the Geosciences Library close by.

Among the local holdings of the library are the Australian topographic series of 1:100 000 and 1:250 000, as well as maps produced by the Departments of Lands and Mineral Resources, the Forestry Commission, conservation and planning establishments, census departments, and most other map producing agencies throughout Australia.

The Map Collection, which contains over 80 000 maps, is open from 8.30 am to 4.30 pm on weekdays. Its comprehensive collection of wall maps is available for lecture use throughout the University. In other respects the collection is for reference only, map identity being obtained from a visual index or catalogue. The map custodian is the chief cartographer of the Division of Geography.

Marine Studies Centre

Director: Associate Professor Andy Short
The Marine Studies Centre integrates and coordinates undergraduate teaching and supervision of postgraduate students in all aspects of marine sciences. Membership of the Centre is open to academic staff and research students working in marine studies. The Centre is run by the Director and the Board which oversees coursework and research initiatives. Operation of the One Tree Island Research Station on the Great Barrier Reef is a responsibility of the Centre. The Centre also facilitates contact from the public about, and advises the University on, all matters of research and teaching in marine sciences and related environmental and resource issues. Further information is available from the Director, Marine Studies Centre, phone (02) 9351 3625, email A.Short@csu.usyd.edu.au, or http://www.usyd.edu.au/su/ marine.

Mathematics Learning Centre

Lecturer-in-charge: Ms Jacqueline M. Nicholas
The Mathematics Learning Centre offers help to students who enter the University with insufficient preparation in mathematics to enable them to cope either with the normal first year mathematics units of study or with the mathematical requirements of other subjects.

Many university units of study assume that students have a certain level of knowledge of mathematics. These include junior units of study in chemistry, computer science, economics and physics and many intermediate and senior units of study, among them biology, physiology, psychology and some options in marine sciences. You should check your faculty handbook carefully to see what is assumed in the units of study you have chosen. If you know that you lack the assumed knowledge, or if you are doubtful whether you are well enough prepared for a unit of study, you should contact the Mathematics Learning Centre.

At the centre we can advise you about your choice of units of study, and help you decide which topics you need to do extra work on. We provide resources for individual study, with guidance from lecturers, and we also arrange small supplementary tutorials for students who are having difficulties. Introductory and bridging courses in mathematics and statistics are organised during the summer.

The centre is located on the 4th floor of the Carslaw Building (Room 455). Any student seeking assistance should call at the centre, or phone (02) 9351 4061.

The Australian Key Centre for Microscopy and Microanalysis

Director: Professor David Cockayne
The Australian Key Centre for Microscopy and Microanalysis is established and supported under the Australian Research Council's Research Centre Programme and focuses on industry interaction, educational development and innovative research. It has access to unparalleled infrastructure and expertise in optical and electron microscopies and microanalysis.

The teaching and research programmes are undertaken by staff of the Electron Microscope Unit, School of Physics and local and overseas visiting academics.

The Key Centre offers Graduate Certificate, Graduate Diploma, Masters and PhD programs which provide students with the knowledge and skills required to become practical microscopists and microanalysis. For further information call Professor Cockayne (02) 9351 2351, see www.kcmm.usyd.edu.au, or visit LG21 Madsen Building (F07).

Faculty and departmental societies

Sydney University Science Association

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

The Association holds a number of activities throughout the year, including barbecues and the Annual Science Ball. The Science Association appoints sports directors who help organise interfaculty sport.

The association runs a stall during orientation week, where T-shirts are sold and you can find out more about what the association does. The Science Bulletin (official publication of SUSS) which heralds information concerning the activities of SUSSand Science departmental societies, is produced weekly and can be found on official departmental noticeboards. The postal address is Box 270, Wentworth Building, University of Sydney, 2006.

The affairs of the association 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 February Semester) and to take an active part in the association 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 SUSS effectively meets the needs of science students on campus.

Member societies

A number of the departments within the Faculty of Science have departmental societies, for example the Alchemist's Society, Biochemical Society, Biological Society, Department of Geosciences Society (includes Geography, Geology, Environmental Science and Marine Science), Mathematical Society, Medical Science Society, Microbiology Society, Physics Society, and Psychological Society. The societies receive grants from the Science Association. They 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. Many science graduates choose to undertake further study to prepare themselves for employment. There is a wide range of graduate diplomas and coursework master's degrees available. Some of these are: biotechnology, food technology, computers and control, electronics, nutrition and dietetics, and the better known ones such as education and librarianship.

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 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 leg-work and initiative involved in finding one will pay off in the long run.

Figures for 1997 establish that over 85% of University of Sydney Science graduates are employed or in full-time study within months of graduation.

Careers Centre

The Careers Centre can help you throughout your course. Visit it as often as you like. Some of the areas in which the Careers Centre might be of assistance to you are: to help you plan a science course that fits in with your personal aptitudes and interests and that keeps as many career options open for you as possible; to answer any queries you may have about careers (the Careers Centre has a careers library that you can browse in whenever you feel like it); to let you know about job prospects for any subject you wish to major in; to help you find employment on graduation; and last but not least, the Careers Centre's Student Employment Section is able to offer you vacation employment and part-time jobs throughout the year.

You will need to make an appointment to talk with one of the advisers about careers, but you do not need one to use the careers library or the Student Employment Section.

The Careers Centre is in the Mackie Building, Arundel Street, Forest Lodge, cross the Parramatta Road footbridge at the Holme Building, turn left, and it is the first building you come to.

A brief history of the Faculty

On 17 April 1882 there was a special meeting of the University Senate to receive a report from the By-laws and Curriculum Committee. The adoption of this report was moved by Mr Rolleston; it recommended:

1. There shall be four Faculties in the University-viz. Arts, Science, Medicine and Law.
2. All undergraduates shall attend first year Arts and after satisfactory examination at the end of first year 'may elect which of the following Faculties, whether Arts, Science or Medicine, they will graduate in, and after the Second Year examination' they may elect to graduate in Law.

After deciding upon the regulations for the Faculty of Arts the meeting was adjourned to the following day. It was then (18 April 1882) that regulations for the Faculty of Science were formulated. Two degrees, BSc and DSc, were established. The course of study in the bachelor's degree was as follows:

- First Year Arts: Latin; one of Greek, French or German; mathematics; elementary chemistry; elements of natural philosophy.
- Second Year: chemistry; physics; natural history; mathematics; French or German.
- Third Year: At least three of: chemistry; physics; mathematics; mineralogy; geology and palaeontology; zoology and botany.

This, then, was the formal beginning of the Faculty. It was not the beginning of the teaching of science in the University. The first professors, all based in the Faculty of Arts, arrived in 1852; they were the Rev. Dr John Woolley (Classics), M. B. Pell (Mathematics and Natural Philosophy) and John Smith (Chemistry and Experimental Philosophy (i.e. Physics)). In 1853 there were suggestions that chairs in geology and natural history be established; however, no appointments were made. There was evidently some pressure for academic studies in geology and mineralogy and in 1866 A. M. Thomson was appointed reader in geology and mineralogy and demonstrator in practical chemistry. In 1870 he became professor of geology.

In 1880 two events occurred that were to have a profound influence upon the development of the University: the Public Instruction Act, framed by Sir Henry Parkes, was passed by the N.S.W. Parliament; and John Henry Challis died. The Public Instruction Act meant that a much wider group of children received a secondary education and formed a reservoir for increased university enrolments. And upon the death of Challis, a prosperous businessman who had earlier endowed the remarkable Royal Window in the Great Hall, it was revealed that he had left his fortune to the University. This money, a colossal sum for the then financially struggling institution, was to accrue for five years after the death of Mrs Challis, and when finally received in 1889-90 amounted to more than £250 000. At that time the annual governmental funding was around £5-10 000, and by 1902 had risen to only £14 000. The knowledge of these riches-to-come gave the Senate a sense of financial security for the first time; hitherto, apart from fees charged, the University had been completely dependent upon the Government of New South Wales. There was an air of optimism; the University could expand instead of merely survive.

On 26 July 1882 the draft of a Bill went to Parliament entitled 'A Bill for attending the Faculties and Schools in the University of Sydney and for other purposes in relation thereto'. The Senate was empowered to establish the Faculty of Science, the government providing the money required until the Challis bequest should be received. In 1882 the chair of geology was replaced by a chair in natural history, and J. S. Stephens was appointed to it. He also doubled as professor of classics from 1884, when the Rev. Dr Charles Badham died, until a new appointment was made. The chair of chemistry and perimental philosophy was divided, Smith retaining chemistry, the new chair of physics being filled by R. Threlfall. He insisted upon the introduction of practical work and designed and supervised the construction of a physical laboratory. The names of the first graduates in science appeared in the Calendar for 1885. They were Frank Leverrier and Clarence E. Wood. By 1890 there were nine graduates, including the first woman, Fanny E. Hunt (1888).

In 1890 the obligatory year of Arts for entry to the Faculty of Science was dropped. Entry became by means of an Arts degree, a pass in Arts I or a pass in the Senior Public Examination (equivalent to today's HSC) or equivalent examination in the following subjects: Latin; one of Greek, French or German; and three of arithmetic, algebra, geometry, trigonometry, elementary surveying and astronomy, mechanics, and applied mechanics. There was now a three-year course in science (the fourth year for honours came in 1922) and all first year students took biology, chemistry, mathematics, physics and physiography.

In 1932, when the Faculty was 50-years-old, there were six chairs: physics, chemistry, zoology, geology and physical geography, botany, and chemistry (pure and applied). There were 353 undergraduates. In 1982 (the centenary year) there were 31 chairs; many of these were in new disciplines, and some disciplines had several professors. The number of students had grown to 2500.

At the end of the Second World War, the Commonwealth Reconstruction Training Scheme provided entry to the University for many ex-servicemen and ex-servicewomen. The increased numbers of students required additional facilities; the staff was enlarged and several temporary buildings (some of which are still in use) were put up. The next period of expansion came in 1951 when the then Prime Minister, R. G. Menzies, announced the entry of the Commonwealth Government into University financing. This led to the expansion of the University into the Darlington area and the erection of many new buildings: Carslaw, Chemistry, Geology and Geophysics, and Biochemistry, to name a few.

In 1954 a donation from Adolph Basser enabled the University to buy its first computer; in 1956 an electron microscope was purchased. These items of major equipment opened up many new fields of research and teaching.

Undergraduates have come to play an increasing part in the activities and operation of the Faculty. In 1904 the Science Society was established, which eventually became the Sydney University Science Association, and in 1971 the first students were elected to the Faculty of Science.

In 1985 the Faculty celebrated the centenary of its first graduates. A series of lectures, exhibitions, films and social events was held. A history book *Ever Reaping Something New* was published. A film about the Faculty, entitled *A Century of Science,* was also produced and broadcast nationally by the ABC.

Undergraduate degree regulations

This chapter contains the regulations governing the undergraduate degrees offered by the Faculty of Science. These are:

B achelor of S cience	BSc
Bachelor of Computer Science and Technology	BCST
Bachelor of Computer Science and Technology (Advanced)	BCST(Advanced)
Bachelor of Medical Science	BMedSc
Bachelor of Pharmacy	BPharm
Bachelor of Psychology	BPsych

The Bachelor of Science includes the specially designated degree programs:

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 (Nutrition)	BSc(Nutrition)

The Faculties of Arts and of Science jointly offer the:

Bachelor of Liberal Studies	BLibStud

The Faculty also jointly offers several combined degree programs:

Bachelor of Arts/B achelor of Science	BA/BSc
Bachelor of Engineering/Bachelor of Science	BE/BSc
Bachelor of Science/Bachelor of Arts	BSc/BA
Bachelor of Science/Bachelor of Commerce	BSc/BCom
Bachelor of Science/Bachelor of Engineering	BSc/BE
Bachelor of Science/Bachelor of Laws	BSc/LLB

The regulations governing postgraduate award courses can be found in Chapter 8.

Degree of Bachelor of Science

Regulations

Resolutions of the Senate

The following Resolutions governing candidature for the degree of Bachelor of Science have been prescribed by the Senate.

Definitions

1. For the purposes of the Resolutions:

(1) (i) A *unit of study* shall consist of such lectures, tutorial instruction, essays, exercises, or practical and field work as may be prescribed.

(ii) Each unit of study shall be designated as a *Junior, Intermediate, Senior* or *Honours* level unit of study. In addition certain units of study may be designated as *Advanced* or *Special Studies Program* units of study.

(iii) Junior, Intermediate, Senior and Honours units of study are indicated by unit of study level designations 1000-1999, 2000-2999, 3000-3999 and 4000-4999 respectively; a Junior unit of study is one for which the qualifying units of study, prerequisites or assumed knowledge are non-tertiary qualifications or the co-requisites are other Junior units of study; an Intermediate unit of study is one for which the qualifying units of study or prerequisites are Junior or Intermediate units of study or the corequisites are other Intermediate units of study; a Senior unit of study is one for which the qualifying units of study or prerequisites are Intermediate or Senior units of study or the corequisites are other Senior units of study.

(iv) Except for Honours units of study, each unit of study shall be confined to one semester in duration, with assessment being completed during that semester.

(v) Except as provided in sections 4(1)(xi), 6(2), 12 and 13, each unit of study shall be designated as belonging to one or more *Science Subject Areas,* as determined by the Faculty. The approved Science Subject Areas are:

Agricultural Chemistry
Anatomy and Histology
Biochemistry
Biology
Cell Pathology
Chemistry
Computer Science
Engineering Science
Geography
Geology
Geophysics
History and Philosophy of Science
Immunology
Information Systems
Marine Science
Mathematics
Microbiology
Nutritional Science
Pharmacology
Physics
Physiology
Psychology
Soil Science
Statistics

(vi) Except as provided in sections 7(1), 12 and 13, candidates who have completed a unit of study shall have credit points credited towards the completion of a degree in accordance with the following:

each unit of study shall be of 3, 4, 6, 8, or 12 credit points value;

a unit of study may comprise modules of smaller credit point value which shall be taken in various combinations as determined by the Head of the Department concerned.

(2) To *'complete a unit of study'* and derivative expressions mean:

(i) to attend the lectures and the meetings for tutorial instructions, if any;

(ii) to complete satisfactorily the essays, exercises and the practical and field work, if any; and

(hi) to pass the examinations of the unit of study.

(3) A *qualifying unit of study* means a unit of study which, except with the permission of the Faculty, must be completed with a result of Pass or better [not Pass (Concessional) - see sections 9(2) and 9(7)] before enrolment in the unit of study for which it qualifies.

(4) A *prerequisite unit of study* means a unit of study other than a qualifying unit of study which, except with the permission of the Head of the Department concerned, must have been completed with a result of Pass (Concessional) or better [see sections 9(2) and 9(7)] prior to a candidate enrolling in a unit of study for which it is a prerequisite.

(5) A *corequisite unit of study* means a unit of study which, unless previously completed or except with the permission of the Head of the Department concerned, must be taken concurrentiy with the unit of study for which it is a corequisite.

Grades of Award

2. The degree shall be awarded in two grades, namely the Pass degree and the Honours degree.

Units of study for Pass degree

3. Units of study for the degree shall, except as provided in sections 4(l)(xi), 6, 12 and 13:

    (1) have such names,

    (2) be in such subjects,

    (3) be in such Science Subject Areas,

    (4) have such credit point values, and

    (5) have such qualifying, prerequisite and corequisite units of study as are determined from time to time by the Faculty, and are set out in Table I associated with this section.

Requirements for Pass degree

4. (1)   To qualify for the Pass degree, candidates must complete units of study giving credit for a total of at least 144 credit points, where:

    (i) at least 12 credit points are from units of study in the Science Subject Areas of Mathematics and Statistics;

    (ii) except for those units of study which are designated in the tables of units of study as not satisfying the requirements of this section, at least 36 credit points, being at least 12 credit points from each of three Science Subject Areas, are from Junior units of study;

    (iii) except as provided in sections 13 and 15(2)(b), at least 72 credit points are from Intermediate and Senior units of study in Science Subject Areas;

    (iv) except as provided in section 12, at least 24 credit points are from Senior units of study in a single Science Subject Area other than History & Philosophy of Science;

    (v) at least 16 credit points are from Intermediate or Senior units of study in a single Science Subject Area other than that used to satisfy the requirement in section 4(1)(iv);

    (vi) no more than 32 credit points are from Intermediate units of study which belong to a single Science Subject Area;

    (vii) no more than 48 credit points are from Senior units of study which belong to a single Science Subject Area;

    (viii) no more than 16 credit points are from Intermediate units of study and no more than 24 credit points are from Senior units of study which belong to the Science Subject Areas of Anatomy and Histology, Cell Pathology, Immunology, Pharmacology and Physiology;

    (ix) no more than 16 credit points are from Intermediate units of study which belong to the Science Subject Area of Engineering Science;

    (x) no more than 28 credit points are from units of study in which the grade of Pass (Concessional) (or its predecessor prior to Second Semester 1997, Terminating Pass) was awarded;

    (xi) except as provided in sections 11 (4) and 13, no more than 28 credit points are from units of study not in Science Subject Areas, taken from not more than two subject areas but excluding those units of study which the Faculty has deemed to be mutually exclusive with units of study offered for the Bachelor of Science degree.

    (2) No unit of study may be credited more than once for the degree nor be used more than once in satisfying the conditions in 4 (1) (ii), (iv) and (v).

    (3) No credit points may be credited for the degree from more than one of such units of study as the Faculty may deem to be mutually exclusive (listed in column (e) of Table I associated with section 3), except that where a candidate enrols in a unit of study which has substantial content in common with another unit of study which was previously completed, that candidate shall undertake alternative assessed work as determined by the Head of the Department concerned.

    (4) Where a candidate enrols in a unit of study which is the same as, or has substantial content in common with, a unit of study which was previously attempted but was not completed satisfactorily, the Head of the Department

concerned may exempt the candidate from certain of the unit of study requirements, on receipt of evidence that the candidate has previously demonstrated competence to perform those requirements.

Restrictions on enrolment

5. (1)   Except with the permission of the Faculty, candidates may not take in any one semester units of study with a total number of credit points in excess of 28.

    (2)   The choice of units of study made by a candidate shall be limited by the exigencies of the timetable provided that candidates who have completed at least 36 credit points of Junior units of study and who seek to enrol in two units of study which are given wholly or partly at the same time may be granted, by the Heads of the Departments concerned, permission to attend equivalent units of study or parts of units of study given at another time.

Enrolment in units of study not in Table I

6. (1)   A candidate of merit may, under special circumstances and with the permission of the Faculty, enrol in a unit of study other than those specified in Table I associated with section 3. Credit points will be counted from such a unit of study towards the maximum of 28 credit points specified under section 4 (1)(xi).

    (2)   A candidate of exceptional merit may, under special circumstances and with the permission of the Dean, undertake studies within the Faculty other than those units of study specified in Table I accompanying section 3, and upon completion of those studies have them counted towards the degree. The candidate may be given credit for these studies of up to 40 credit points, which will be designated by the Dean as Junior, Intermediate or Senior. Such credit points shall count towards the number of credit points required for the degree in accordance with section 4(1).

Upgrade of units of study

7. (1) A candidate may not enrol in a unit of study which was previously completed with a grade of Pass or better.

    (2) Candidates who have been awarded a Pass (Concessional) in any unit of study may enrol in that unit of study again. On completion of that unit of study such candidates will not be credited with any further credit points for that unit of study unless the unit of study is completed at least at Pass level and the credit points had not previously been credited in accordance with section 4(l)(x).

Time limits, Suspension, Part-time study

8. (1)   Except with the permission of the Faculty a candidate must complete the requirements for award of the degree within ten calendar years of admission to candidature. This section applies to all candidates first enrolling in the degree after 1995, and applies from 1998 to candidates who first enrolled in the degree before 1996.

    (2)   A candidate must re-enrol each year unless the Faculty has approved suspension of candidature. Candidature lapses if a candidate has not obtained approval for suspension and does not re-enrol. Candidates whose candidature has lapsed must be selected for admission again before they can re-enrol.

    (3)   Except with the prior permission of the Faculty a candidate shall not be granted a suspension of candidature in order to enrol in another course of tertiary study. Candidature shall lapse if a candidate without prior permission of Faculty enrols in another course of tertiary study after having been granted a suspension of candidature.

    (4)   Candidates who in any semester intend to proceed towards the degree of Bachelor of Science by part-time study shall indicate this intention when enrolling.

    (5)   Candidates proceeding by part-time study shall not in any one semester take units of study with a total credit point value of more than 17 credit points.

Unit of study assessment

9. (1)   Candidates may be tested by written and oral class examinations, exercises, essays or practical work or any

combination of these, and the results of such tests may be taken into account by the Faculty Board of Examiners in deterrnining the final results for a course.

(2) In all units of study passes may be graded into High Distinction, Distinction, Credit, Pass and Pass (Concessional). The grades High Distinction, Distinction or Credit indicate work of a standard higher than that required for a Pass.

(3) Where a Department offers a unit of study at two levels the performance of candidates in the two levels in terms of comparability of quality of work will be matched by that Department so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade obtained at the other level.

(4) Candidates who have been prevented by duly certified illness or misadventure from sitting for the whole or part of a unit of study assessment may be tested at such times and in such way as the Head of the Department concerned or the Faculty Board of Examiners shall determine.

(5) Candidates who do not pass in a unit of study shall, unless exempted by the Faculty, again attend lectures and other classes and complete tie prescribed written and other work in all such units of study in which they are permitted to re-enrol.

(6) Candidates who repeat any unit of study shall not be eligible for any prize or scholarship awarded in connection with the examination for such a unit of study.

(7) Subject to the provisions of section 4(l)(x), the award of a Pass (Concessional) in a unit of study entitles the candidate to be credited with the full number of credit points for that unit of study.

Credit for other units of study

10. (1) Subject to the limitations on total credit given in section 10(2), candidates may be given credit for a unit of study which they have completed in another recognised program provided that:

(i) The unit of study was completed not more man nine years before admission to candidature in the Faculty, except with the permission of the Dean;

(ii) the unit of study was completed with a result equivalent to Pass or better (not Pass (Concessional));

(iii) if the unit of study was completed at another university or recognised institution after admission to candidature in the Faculty, then permission had been obtained in advance from the Faculty, and either

(a) the unit of study content was material not taught in any corresponding unit of study at the University of Sydney, or

(b) the candidate was unable for good reason to attend a corresponding unit of study at the University of Sydney;

(iv) where the unit of study is considered by the Faculty to be equivalent to a unit of study listed in the Tables associated with section 3, section 12 or section 13, then credit shall be given for that equivalent unit of study, and the candidate shall be regarded as having completed that equivalent unit of study for the purposes of these Resolutions;

(v) where the unit of study is considered by the Faculty as appropriate, but no unit of study listed in the Tables associated with section 3, section 12 or section 13 is considered equivalent, then the candidate shall be given credit for such number of credit points and with such a result as the Faculty may determine in order to provide fair comparison with units of study listed in Table I. Credit points credited under this section shall be designated as being in such Science Subject Areas, and either Junior, Intermediate or Senior, as the Faculty may determine.

(2) Except as provided in section 13, section 14 and section 15 award of credit for units of study shall be limited such that:

(i) the total credit point value which is credited to a candidate in accordance with section 10(1) from units of study in another recognised program, including those

for which credit has been abandoned, may not, except with the permission of the Dean, exceed 96;

(iii) in satisfying the requirements of section 4, a candidate must have been credited with at least 48 credit points, of which at least 24 are Senior credit points, from units of study which are listed in Table I and taken at the University of Sydney.

BSc Advanced Program

11.(1) Notwithstanding sections 4, 5 and 8 of these Resolutions, a candidate may be accepted into the Advanced Degree Program or the Advanced Mathematics Degree Program.

(2) To qualify for the award of the BSc degree in the Advanced Degree Program or the Advanced Mathematics Degree Program, candidates shall pass all units of study at the first attempt and, except with the permission of the Faculty, shall:

(i) complete units of study to a value of an average of at least 24 credit points in each semester of enrolment over the duration of the degree;

(ii) except as provided in sections 13, 14 and 15, complete at least 96 credit points from Intermediate and Senior units of study;

(iii) qualify for admission to an Honours unit of study under Section 16.

(3) (i) (a) include, in the Junior units of study taken, at least 24 credit points from units of study designated as Advanced and/or from studies at Junior level taken under the Faculty's Talented Student Program, as approved from time to time by the Dean under Resolution 6(2); or

(b) qualify for admission to Intermediate units of study designated as Advanced (and/or studies at Intermediate level taken under the Faculty's Talented Student program, as approved from time to time by the Dean under Resolution 6(2)) to a value of at least 16 credit points.

(ii) include, in the Intermediate units of study taken, at least 16 credit points from units of study designated as Advanced and/or from studies at Intermediate level taken under the Faculty's Talented Student Program, as approved from time to time by the Dean under Resolution 6(2);

(iii) complete at least 24 credit points from Senior units of study designated as Advanced and/or from studies at Senior level taken under the Faculty's Talented Student Program, as approved from time to time by the Dean under Resolution 6(2) and, except as provided in sections 13 and 15 a total of at least 48 credit points from Senior units of study;

(4) (i) (a) include, in the Junior units of study taken, at least 24 credit points from units of study designated as Advanced and/or from studies at Junior level taken under the Faculty's Talented Student Program, as approved from time to time by the Dean under Resolution 6 (2). Of these 24 credit points, at least 12 credit points are from Junior units of study designated as Advanced in the Science Subject Areas of Mathematics and Statistics; or

(b) qualify for admission to Intermediate units of study designated as Advanced in the Science Subject Areas of Mathematics and Statistics (and/or studies at Intermediate level in the Science Subject Areas of Mathematics and Statistics taken under the Faculty's Talented Student program, as approved from time to time by the Dean under Resolution 6(2)) to a value of at least 16 credit points.

(ii) include, in the Intermediate units of study taken, at least 24 credit points in the Science Subject Areas of Mathematics and Statistics. Of these 24 credit points, at least 16 credit points are from units of study designated as Advanced and/or from studies at Intermediate level taken under the Faculty's Talented Student Program, as approved from time to time by the Dean under Resolution 6(2);

BSc

Undergraduate degree regulations

(iii) complete at least 24 credit points from Senior units of study in the Science Subject Areas of Mathematics and Statistics designated as Advanced and/or from studies at Senior level taken under the Faculty's Talented Student Program, as approved from time to time by the Dean under Resolution 6(2) and, except as provided in sections 13 and 15 a total of at least 48 credit points from Senior units of study;

(iv) complete no more than 44 credit points from units of study not in Science Subject Areas.

Specially designated BSc degree programs

12. Notwithstanding sections 4, 5 and 8 of these resolutions, candidates wishing to graduate in specially designated degree programs shall, except with the permission of the Faculty, complete the units of study as set out in the Tables associated with this section as follows:

(1)	Bioinformatics	Table IA
(2)	Environmental	Table IB
(3)	Marine Science	Table IC
(4)	Molecular Biology & Genetics	Table ID
(5)	Nutritional Science	Table IE

Science/Law

13.(1) Notwithstanding the Resolutions of the Senate relating to degrees in more than one Faculty and subject to section 4 of these resolutions, a candidate may proceed concurrently for the degrees of Bachelor of Science, including the Bachelor of Science Advanced Degree Program or the Bachelor of Science Advanced Mathematics Degree Program, and Bachelor of Laws and may receive credit for up to 48 credit points in respect of the units of study set out in Table n associated with this section for the Bachelor of Science degree, provided that:

(i) such a candidate may not, except with the express permission of the Deans of the Faculties of Science and Law, enrol in units of study of a total credit point value exceeding that specified in section 5(1);

(ii) with the exception of units of study in Table n, only units of study from Science Subject Areas may be credited towards the BSc degree;

(iii) in addition to the 48 credit points of units of study set out in Table n, such a candidate shall complete at least 60 credit points from Intermediate and Senior units of study in Science Subject Areas in Table I, in accordance with section 4.

(2) Except with the permission of the Faculty of Law, a candidate may not take any of the Intermediate or Senior units of study in Table II until they have completed the units of study Legal Institutions and Law, Lawyers and Iustice in Australian Society.

Science/Engineering

14.(1) Notwithstanding the Resolutions of the Senate relating to degrees in more than one Faculty or any other of these Resolutions, candidates who have completed studies in the Faculty of Engineering may be admitted by the Faculty of Science to candidature for the degree.

(2) Such candidates shall comply with such requirements for each degree as may be prescribed by the Resolutions of the Senate and by Resolution of the Faculty except that students enrolled in the Advanced Degree Program or Advanced Mathematics Degree Program shall complete at least 80 credit points from Intermediate and Senior units of study.

Science/Medicine, Arts/Science, Science/Commerce

15.(1) Notwithstanding the Resolutions of the Senate relating to degrees in more than one Faculty or any other of these Resolutions, a candidate may proceed concurrently for the degrees of

(i) Bachelor of Science, Bachelor of Medicine and Bachelor of Surgery[2],

(ii) Bachelor of Arts and Bachelor of Science;

(iii) Bachelor of Science and Bachelor of Commerce;

(iv) Bachelor of Engineering and Bachelor of Science

(2) Such candidates shall comply with such requirements for each degree as may be prescribed by the Resolutions of

the Senate and by Resolutions of the Faculties except that students enrolled concurrently in the Bachelor of Science Advanced Degree Program or Advanced Mathematics Degree Program and those other degrees listed below shall complete the following numbers of credit points from Intermediate and Senior units of study:

(a) Bachelor of Commerce at least 72 credit points of Intermediate and Senior units of study including at least 36 credit points of Senior units of study

(b) Bachelor of Engineering at least 56 credit points of Intermediate and Senior units of study including at least 24 credit points of Senior units of study.

Admission to Honours units of study

16.(1) In order to qualify for admission to an Honours unit of study candidates shall have qualified for the award of a Pass degree and be considered by the Faculty and the Head of the Department concerned to have the requisite knowledge and aptitude for Honours units of study.

(2) With the permission of the appropriate Head of Department and provided the requirements in section 16(1) have been satisfied the following may also be admitted to Honours units of study:

(i) Pass graduates of the Faculty of Science.

(ii) Pass graduates holding Bachelor of Science degrees or equivalent from such other institutions as the Faculty may from time to time determine.

(3) Candidates may not be enrolled at any one time in Honours units of study from more than one subject area listed in 17(3).

(4) Candidates who have qualified for the Honours degree may take, in the next semester or at such later times as the Faculty permits, an additional 48 credit points of Honours units of study from another one of the subject areas listed in 17 (3) for which they are qualified

Honours units of study

17.(1) Candidates for the Honours degree shall complete 48 credit points of Honours units of study from one of the subject areas listed in 17 (3), full-time over two consecutive semesters.

(2) On the recommendation of the Head of Department concerned the Faculty may permit a candidate to undertake Honours units of study half-time over four consecutive semesters. This permission will be granted only if the Faculty is satisfied that the candidate is unable to attempt the units of study on a full-time basis.

(3) There shall be Honours units of study in the following subjects: Agricultural Chemistry, Anatomy and Histology, Applied Mathematics, Biochemistry, Biology, Cell Pathology, Chemistry, Computer Science, Geography, Geology, Geophysics, History and Philosophy of Science, Information Systems, Marine Sciences, Microbiology, Nutritional Science, Pharmacology, Physics, Physiology, Psychology, Pure Mathematics, Soil Science, Statistics.

Classes of Honours and Medal

18.(1) There shall be three Classes of Honours, namely Class I, Class II and Class HJ, and within Class II there shall be two Divisions, namely Division 1 and Division 2.

(2) A candidate with an outstanding performance in an Honours subject area shall, if deemed to be of sufficient merit by the Faculty, receive a bronze medal.

(3) There shall be no re-examination for Honours.

Transitional provisions

19.(1) These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January, 1997.

(2) With the permission of the Faculty candidates who first enrolled for the degree prior to 1997 and have not had a period of suspension or exclusion may until 31 March 2000 choose to qualify for the degree under the old Resolutions.

(3) With the permission of the Faculty candidates who have enrolled for the degree as part-time candidates prior to 1997 may until 31 March 2002 choose to qualify for the degree under the old Resolutions.

(4) With the permission of the Faculty and subject to the restrictions in section 8, candidates who first enrolled for the degree prior to 1997 may qualify for the degree by completing 140 credit points.

Combined Arts/Science degrees

BA/BSc Resolutions of the Faculty

These Resolutions should be read in conjunction with the Resolutions of Senate governing candidature for the degrees of Bachelor of Arts and Bachelor of Science.

1. Candidature for the combined program is full-time.
2. Candidates qualify for the combined degrees by completing 240 credit points including:
   (i) at least 12 credit points from the Science Subject Areas of Mathematics and Statistics;
   (ii) 24 credit points from Junior units of study in Science Subject Areas;
   (iii) (a) at least 72 Senior credit points from Part A of the Table of Units of study for the BA [see Arts handbook] including a major; and (b) at least 72 credit points from Senior and Intermediate units of study in Science Subject Areas taken in accordance wifli the Resolutions of the BSc.
3. Candidates will be under the general supervision of one of the Faculties until they complete at least 144 credit points (normally the first six semesters) and they will complete the combined program under the general supervision of the other Faculty. General supervision covers all areas of policy and procedure affecting candidates such as degree rules, unit of study nomenclature, enrolment procedures and the Dean to whom reference is to be made at any given time.
4. Candidates who are qualified for one or both of the degrees and otherwise qualified to do so may complete an Honours unit of study. In cases where the Honours unit of study may be completed in either Faculty, it shall be completed in the Faculty in which the candidate has completed the final qualifying unit of study for the Honours unit of study.
5. Candidates may abandon the combined program and elect to complete either a BSc or a BA in accordance with the Resolutions of the Senate governing those degrees.
6. The Deans of Arts and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in the Resolutions of the Senate or these Resolutions.

BSc/BA Resolutions of the Faculty

These Resolutions should be read in conjunction with the Resolutions of Senate governing candidature for the degrees of Bachelor of Science and Bachelor of Arts.

1. Candidature for the combined program is full-time.
2. Candidates qualify for the combined degrees by completing 240 credit points from Science Subject Areas and from Part A of title Table of units of study for the BA degree including, in the first six semesters of enrolment:
   (i) at least 12 credit points from the Science Subject Areas of Mafliematics and Statistics.
   (ii) at least 24 credit points from Junior units of study in Science Subject Areas.
   (iii) at least 72 Senior and intermediate credit points from units of study in Science Subject Areas taken in accordance with the Resolutions for the degree of Bachelor of Science; and
   (iv) at least 24 credit points from Part A of the Table of units of study for the Bachelor of Arts with the exception of those from the Science Subject Areas of Mathematics, Statistics, Psychology, Computer Science and Geography.
3. Over the ten semesters of the program candidates must complete at least 72 Senior credit points from Part A of the Table of units of study for the Bachelor of Arts degree including a major.
4. Candidates will qualify for the award of the degree of Bachelor of Science after having successfully completed 144 credit points in accordance with Section 2 of these Resolutions.

5. Candidates who are qualified for one or bom of the degrees and odierwise qualified to do so may complete an Honours unit of study. In cases where the Honours unit of study may be completed in either Faculty, it shall be completed in the Faculty in which the candidate has completed the final qualifying unit of study for the Honours unit of study.
6. Candidates may abandon the combined program and elect to complete either a BSc or a BA in accordance with the Resolutions of the Senate governing these degrees.
7. In the first six semesters of enrolment the Dean of Science shall exercise authority in any matter concerning the combined degree program not otherwise dealt with in the Resolutions of Senate for these Resolutions. Thereafter the Dean of Arts shall exercise authority.

Combined Science/ Engineering degrees

BSc/BE Resolutions of the Faculty

1. Pursuant to section 14 of the Resolutions of the Senate governing the degree of Bachelor of Science, students who are of two or three years' standing in the Faculty of Engineering may be admitted to candidature for the degree.
2. To be eligible for admission, such students:
   (1) must have gained credit in the Faculty of Engineering for not less man 96 credit points if of two years' standing in that Faculty, or not less than 108 credit points if of three years' standing in that Faculty; and
   (2) except with the permission of the Dean of the Faculty of Science, must have completed, at full Pass level or better, all units of study attempted in the Faculty of Engineering at their first examination, including at least 32 credit points of Intermediate units of study which are equivalent to units of study available to candidates in the BSc, of which at least 16 credit points must be offered by Departments of the Faculty of Science, and
   (3) must have completed units of study which meet the prerequisites for at least 24 Senior credit points in a single Science Subject Area under the BSc Regulations.
3. Except as provided in Section (4) to qualify for the award of the Pass degree, candidates (after admission under section 14 of the Resolutions of the Senate governing the degree of Bachelor of Science) shall complete, in one year of full-time study or in two consecutive years of part-time study, units of study listed in Table I of the BSc Resolutions totalling at least 48 credit points subject to the provisos:
   (1) that at least 40 credit points shall be for Intermediate or Senior units of study, and at least 24 credit points shall be for Senior units of study in a single Science Subject Area other than Engineering Science; and
   (2) that, except with the permission of the Dean, the 48 credit points shall not include any credit points:
      (i) for units of study taught by Departments in the Faculties of Arts or Economics or Engineering
      (ii) for units of study regarded by the Faculty as equivalent to those already completed within the Faculty of Engineering.
   Permission will be given to include in these 48 credit points units of study taught in the Faculty of Engineering only if the total number of Engineering Science credit points counted toward the BSc, including those counted as credit points in satisfying section 2(2) above, does not exceed 16.
4. Candidates who fail to complete 48 credit points as required in Section 3 of the Resolutions but who have completed a minimum of 40 credit points may in the following year of their BE enrolment complete the remaining units of study necessary to satisfy the 48 credit point requirement of the BSc. Otherwise such candidates may only be readmitted to the Faculty of Science if a successful application is made at the appropriate time through the Universities Admission Centre. Successful

applicants will be given credit for units of study completed in accordance with section 10 of the Resolutions of the Senate governing the Bachelor of Science degree.

5. Candidates admitted under Section 14 shall comply with Section 5 of the Resolutions of the Senate governing the degree of Bachelor of Science.

6. To qualify for admission to Honours units of study, such candidates shall comply with Section 16 of the Resolutions of the Senate.

   There is no provision for students admitted under Section 14 to continue in the Faculty of Science after one full-time or two part-time years of study except to complete an Honours course. Candidates who fail to complete the required 48 credit points may only be re-admitted to the Faculty of Science if a successful application is made at the appropriate time through the Universities Admissions Centre. Successful applicants will be given credit for units of study completed in accordance with section 10 of the Resolutions of the Senate governing the degree of Bachelor of Science.

BE/BSc Joint Resolutions of the Faculties of Engineering and Science

1. Candidature for this combined degree program is a <u>minimum</u> of 5 years of full-time study.

2. Candidates qualify for the two degrees of the combined program (a separate testamur being awarded for both the BE and the BSc) by completing at least 240 credit points which must include the following:

   (a) At least 160 credit points from the units of study prescribed for the BE specialisation undertaken. These units of study are set out in the tables appended to the Senate Resolutions relating to the BE degree.

   (b) At least 80 credit points from units of study listed in Table I for the BSc degree other than those in the Science Subject Area of Engineering Science, 32 of which must be from Intermediate units of study and 24 of which must be from Senior units of study in one Science Subject Area.

   (c) The same unit of study cannot be used to satisfy the requirements of (a) and (b).

3. (a) Candidates may not enrol in any unit of study which is substantially the same as one they have already passed (or in which they are currently enrolled).

   (b) The choice of units of study made by a candidate shall be limited by the exigencies of the timetable except that where two units of study are given wholly or partly at the same time the Heads of the Departments concerned may give permission for the candidate to attend equivalent units or parts of units at another time.

4. Candidates will be under the general supervision of the Faculty of Engineering. General supervision covers all areas of policy and procedures affecting candidates, such as combined degree program rules and enrolment procedures. Candidates will be under the supervision of the Faculty of Science regarding enrolment and progression within the BSc component of the combined degree program, as defined in subsection 2(b).

5. Candidates may qualify for the award of BE degree with Honours.

6. Candidates who complete the combined degree program may qualify for admission to an honours year in the Faculty of Science.

7. Candidates who abandon the combined degree program may elect to complete the BE degree in accordance with the appropriate Senate Resolutions.

8. Candidates in the combined degree program may apply for admission to the BSc degree and enrol in such units of study as are required to complete the requirements for the degree. Such candidates shall be deemed to have abandoned the BE/BSc combined degree program.

9. The Deans of the Faculties of Engineering and Science shall jointly exercise authority in any matter concerning this combined degree program not otherwise dealt with in the Senate Resolutions or these joint resolutions.

Combined Science/ Commerce degree

BSc/BCom Joint Resolutions of the Faculties of Science and Economics

These Resolutions should be read in conjunction with the Resolutions of Senate governing candidature for the degrees of Bachelor of Science and Bachelor of Commerce.

1. Candidature for the combined program is full-time

2. Candidates qualify for the combined degrees by completing 240 credit points including:

   (i) in the first six semesters of enrolment, 12 Junior credit points in each of Accounting, Econometrics[1] and Economics and 12 credit points from the Science Subject Areas of Mathematics and Statistics;

   (ii) at least 72 Senior and Intermediate credit points from units of study in the BSc taken in accordance with the Regulations for the degree of Bachelor of Science;

   (iii) at least 64 Senior credit points from the subject areas specified in the BCom regulations including two majors.

4. Candidates will be under the general supervision of the Faculty of Science until the end of the semester in which they complete 144 credit points. After that they will be under the general supervision of the Faculty of Economics. General supervision covers all areas of policy and procedure affecting candidates such as degree rules, unit of study nomenclature, enrolment procedures and the Dean to whom reference is to be made at any given time.

5. Candidates will, in each of the first six semesters of enrolment, enrol in at least 18 credit points of units of study in Science Subject Areas from Table I of the Resolutions of the Senate for the Bachelor of Science degree.

6. Candidates who are qualified to do so may complete an Honours unit of study.

7. Candidates may abandon the combined program and elect to complete either a BSc or a BCom in accordance with the Regulations governing these degrees.

8. The Deans of Economics and Science shall jointly exercise authority in any matter concerning the combined degree program not otherwise dealt with in the Resolutions of the Senate or these Resolutions.

Degree of Bachelor of Liberal Studies

Resolutions of the Senate

Joint Resolutions of the Faculties of Arts and Science For the Bachelor of Liberal Studies Degree

General requirements for the award of the degree

1. (a) Candidates qualify for the degree of Bachelor of Liberal Studies by completing units of study during 8 semesters.

   (b) To qualify for the degree candidates must complete 192 credit points from the Tables of units of study for the degrees of Bachelor of Arts and Bachelor of Science including:

   (i) at least 120 Intermediate or Senior credit points;

   (ii) at least one Arts major and one Science major;

   (iii) 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 Table of units of study for the degree of Bachelor of Arts;

   (iv) 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;

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1. This may be satisfied by certain combinations of Mathematics and Statistics units of study as approved by the Faculties of Economics and Science.

(v) a minimum of 6 credit points from units of study in Mathematics or Statistics.

(c) The credit point value of a unit of study shall be that designated by the Faculty which offers the unit.

The major

2. (a) 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 degree of Bachelor of Arts or from Table I of the Table of units of study for the degree of Bachelor of Science.

(b) The number and level of the credit points constituting an Arts major is as defined in the Resolutions for the Bachelor of Arts.

(c) A Science major consists of at least 32 credit points from a single Science Subject Area, including a minimum of 8 credit points from Intermediate units of study and 24 credit points from Senior units of study.

(d) Candidates shall nominate their choice of majors no later than the beginning of the fifth semester of candidature, but with the permission of the Dean of Arts or Science as appropriate, may change the majors during the candidature.

(e) The majors successfully completed shall be named on the testamur.

Transfer to candidature for the Bachelor of Arts or the Bachelor of Science

3. (a) 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.

(b) 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.

(c) 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.

(d) 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.

Other conditions of candidature

4. (a) Unless otherwise specified, the regulations regarding definitions and entry requirements for units of study taken from the Table of units of study for the degree of Bachelor of Arts shall be those applying to the degree of Bachelor of Arts, and the regulations regarding definitions and entry requirements for units of study taken from Table I of units of study for the degree of Bachelor of Science shall be those applying to the degree of Bachelor of Science.

(b) Unless otherwise specified, the regulations regarding examination rules, variations of entry requirements, grades of degree, satisfactory progress, credit for previous courses, credit for courses taken concurrently at other institutions, restrictions, time limits, suspension and variation of requirements for the degree shall be those applying to the degree of Bachelor of Arts.

Authority of the Deans

5. 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 Senate or these resolutions.

Units of study from other programs

6. With the permission of the Deans of Arts and Science, candidates may count towards the degree a maximum of 28 credit points from units of study (other than those listed in the Tables of units of study for the degrees of Bachelor of

Science and Bachelor of Arts) offered by the Faculties of Architecture, Economics and Education, the Boards of Study in Music and Social Work, the Sydney College of the Arts and the Conservatorium of Music.

Units of study offered by the Faculty of Science which are not in the Table of Units of Study for the BSc

7. A candidate of exceptional merit may, under special circumstances and with the permission of the Dean of Science, undertake studies within the Faculty of Science other than those units of study specified in Table I accompanying section 3 of the BSc degree, and upon completion of those studies have them counted towards the BLibStud degree. The candidate may be given credit for these studies of up to 40 credit points, which will be designated by the Dean as Junior, Intermediate or Senior. Such credit points shall count towards the number of credit points required for the degree in accordance with section 1.

Award of the degree with High Distinction or Distinction

8. (a) A weighted average mark (WAM) will be calculated for each candidate as an overall measure of performance in the degree; 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:

where W_c is the weighted credit point value - i.e., the product of the credit point value and level of weighting of 1 for 1000-1999 units of study or 3 for 2000-2999 units of study and 3000-3999 units of study; and where M_c is the greater of 45 or the mark out of 100 for the unit of study.

(b) The degree will be awarded with the following grades, as determined by the Deans of Arts and Science on the basis of the WAM:

   (i) High Distinction

   (if) Distinction

   (hi) Pass

Award of the degree with Honours

9. (a) On completion of the requirements for the award of the degree with the grade of Distinction or High Distinction, candidates may apply for admission to Honours candidature in a subject area in which an Honours Year is available for the Bachelor of Arts or the Bachelor of Science, provided that the entry requirements have previously been satisfied.

(b) The Honours Year consists of 48 credit points in units of study at 4000 level in a single subject area, or with the permission of the Faculties as Joint Honours in two subject areas.

(c) The 48 credit points in units of study at 4000 level must be completed full-time in two consecutive semesters, except that on the recommendation of the Head of Department concerned, the Faculties may permit completion part-time over three or four consecutive semesters.

(d) Honours candidates, including part-time candidates, may not be enrolled in any other unit of study, program or course at any institution except with permission of the Deans of Arts and Science.

(e) The degree with Honours will be awarded with the following grades, as determined by the Deans of Arts and Science on the basis of the WAM and of the results in the Honours Year:

   (i) Honours Class I, Class II and Class III;

   (ii) Within Honours Class II, in two divisions: (i) and (ii).

(f) A candidate who qualifies for the award of Honours Class I and whose work is in the opinion of the Deans of

Combined degrees BLibStud

Undergraduate degree regulations

Arts and Science of outstanding merit qualifies for a University medal.

Degree of Bachelor of Computer Science and Technology (BCST)

Regulations

Definitions

1. For the purposes of the Resolutions:

    (1) (i) A *unit of study* shall consist of such lectures, tutorial instruction, essays, exercises, or practical and field work as may be prescribed.

    (ii) Each unit of study shall be designated as a *Junior, Intermediate, Senior* or *Honours* level unit of study. In addition certain units of study may be designated as *Advanced* or *Special Studies Program* units of study.

    (iii) Junior, Intermediate, Senior and Honours units of study are indicated by unit of study level designations 1000-1999, 2000-2999, 3000-3999 and 4000-4999 respectively, placed immediately after the name of the course.

    (iv) Candidates who have completed a unit of study shall have credit points credited towards the completion of a degree in accordance with the value of the unit of study as described in Resolutions governing the degree.

    (2) To *'complete a unit of study'* and derivative expressions mean:

    (i) to attend the lectures and the meetings for tutorial instructions, if any;

    (ii) to complete satisfactorily the essays, exercises and the practical and field work, if any; and

    (iii) to pass the examinations of the unit of study.

    (3) A *qualifying unit of study* means a unit of study which, except with the permission of the Faculty, must be completed with a result of Pass or better [not Pass (Concessional); see sections 9(2) and 9(7)] before enrolment in the unit of study for which it qualifies.

    (4) A *prerequisite unit of study* means a unit of study other than a qualifying unit of study which, except with the permission of the Head of the Department concerned, must have been completed with a result of Pass (Concessional) or better [see sections 9(2) and 9(7)] prior to a candidate enrolling in a unit of study for which it is a prerequisite.

    (5) A *corequisite unit of study* means a unit of study which, unless previously completed or except with the permission of the Head of the Department concerned, must be taken concurrently with the unit of study for which it is a corequisite.

Grades of Award

2. The degree shall be awarded in two grades, namely the Pass degree and the Honours degree.

Units of study for Pass degree

3. Units of study for the degree shall include all units of study available for the degrees of BSc, BA, BEc, as well as all core or recommended elective units of study for the degree of BE (Computer Engineering). Each unit of study will

    (1) have such names,

    (2) be in such subjects,

    (3) be in such Subject Areas,

    (4) have such credit point values, and

    (5) have such qualifying, prerequisite and corequisite units of study as are determined in the Resolutions of the corresponding degree. Units of study available as "Senior Advanced" units in the BE (Computer Engineering) are regarded as Senior units for the BCST.

Requirements for Pass degree

4. (1) To qualify for the Pass degree, candidates must complete units of study giving credit for a total of at least 144 credit points, where:

    (i) at least 24 credit points, being at least 12 credit points from the Science Subject Area of Computer Science and at least 12 credit points from the Science Subject Areas of Mathematics or Statistics, are from Junior units of study offered in the Bachelor of Science;

    (ii) at least 12 credit points are from Junior units of study in a single Subject Area other than Computer Science, Mathematics or Statistics or Information Systems;

    (iii) at least 16 credit points are from Intermediate units of study which are offered in the BSc in the Subject Area of Computer Science;

    (iv) at least 24 credit points are from Senior units of study which are offered in the BSc in the Subject Area of Computer Science, including at least 4 credit points which are from the units of study listed in Table IJI(i) associated with these Resolutions;

    (v) at least 26 credit points are from units of study which are offered in the BSc in the Subject Areas of Mathematics and/or Statistics of which at least 12 credit points must be at Intermediate or Senior level;

    (vi) either (a) at least 12 credit points, in addition to those used to satisfy the requirement of section 4(1)(iii), are from Senior units of study each of which is either offered in the BSc in the Subject Area of Computer Science, or is listed in Table HI(ii) associated with this section; or (b) at least 12 credit points are from Senior units of study all of which are offered in the BSc in a single Subject Area other than Computer Science;

    (vii) at least 72 credit points are from Intermediate and Senior units of study;

    (viii) no more than 40 credit points are from units of study which are offered in the BSc in the Subject Areas of Anatomy and Histology, Cell Pathology, Immunology, Pharmacology, and Physiology;

    (ix) no more than 28 credit points are from units of study in which the grade of Pass (Concessional) (or its predecessor prior to Second Semester 1997, Terminating Pass) was awarded;

    (2) No unit of study may be credited more than once for the degree nor be used more than once in satisfying the conditions in 4 (1) (ii) and 4 (1) (vi) (b).

    (3) No credit points may be credited for the degree from more than one of such units of study as the Faculty may deem to be mutually exclusive (listed in the Resolutions of the degrees involved), except that where a candidate enrols in a unit of study which has substantial content in common with another unit of study which was previously completed or is concurrently taken, that candidate shall undertake alternative assessed work as determined by the Head of the Department concerned.

    (4) Where a candidate enrols in a unit of study which is the same as, or has substantial content in common with, a unit of study which was previously attempted but was not completed satisfactorily, the Head of the Department concerned may exempt the candidate from certain of the unit of study requirements, on receipt of evidence that the candidate has previously demonstrated competence to perform those requirements.

Restrictions on enrolment

5. (1) Except with the permission of the Faculty, candidates may not take in any one semester units of study with a total number of credit points in excess of 28.

    (2) The choice of units of study made by a candidate shall be limited by the exigencies of the timetable provided that candidates who have completed at least 36 credit points of Junior units of study and who seek to enrol in two units of study which are given wholly or partly at the same time may be granted, by the Heads of the Departments concerned, permission to attend equivalent units of study or parts of units of study given at another time.

Enrolment in units of study not described in section 3

6. (1) A candidate of merit may, under special circumstances and with the permission of the Faculty, enrol in a unit of study offered in the University of Sydney other than those specified in section 3.

(2) A candidate of exceptional merit may, under special circumstances and with the permission of the Dean, undertake studies other than those units of study specified in the Table accompanying section 3, and upon completion of those studies have them counted towards the degree. The candidate may be given credit for these studies of up to 40 credit points, which will be designated by the Dean as Junior, Intermediate or Senior. Such credit points shall count towards the number of credit points required for the degree in accordance with section 4(1).

Upgrade of units of study

7. (1) A candidate may not enrol in a unit of study which was previously completed with a grade of Pass or better.
(2) Candidates who have been awarded a Pass (Concessional) in any unit of study may enrol in that unit of study again. On completion of that unit of study such candidates will not be credited with any further credit points for that unit of study unless fhe unit of study is completed at least at Pass level and the credit points had not previously been credited in accordance with section 4(l)(viii).

Time limits, Suspension, Part-time study

8. (1) Except with the permission of the Faculty a candidate must complete the requirements for award of the degree within ten years of admission to candidature. This section applies to all candidates first enrolling in the degree after 1995, and applies from 1998 to candidates who first enrolled in the degree before 1996.
(2) A candidate must re-enrol each year unless the Faculty has approved suspension of candidature. Candidature lapses if a candidate has not obtained approval for suspension and does not re-enrol. Candidates whose candidature has lapsed must be selected for admission again before they can re-enrol.
(3) Except with the prior permission of the Faculty a candidate shall not be granted a suspension of candidature in order to enrol in another course of tertiary study. Candidature shall lapse if a candidate without prior permission of Faculty enrols in anodier course of tertiary study after having been granted a suspension of candidature.
(4) Candidates who in any semester intend to proceed towards the degree of Bachelor of Computer Science and Technology as part-time candidates shall indicate this intention when enrolling.
(5) Candidates proceeding as part-time candidates shall not in any one semester take units of study with a total credit point value of more than 17 credit points.

Unit of study assessment

9. (1) Candidates may be tested by written and oral class examinations, exercises, essays or practical work or any combination of these, and the results of such tests may be taken into account by the Faculty Board of Examiners in determining the final results for a unit of study.
(2) In all units of study passes may be graded into High Distinction, Distinction, Credit and Pass, and Pass (Concessional). The grades High Distmction, Distinction or Credit indicate work of a standard higher than that required for a Pass.
(3) Where a Department offers a unit of study at two levels the performance of candidates in the two levels in terms of comparability of quality of work will be matched by that Department so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade obtained at the other level.
(4) Candidates who have been prevented by duly certified illness or misadventure from sitting for the whole or part of a unit of study assessment may be tested at such times and in such way as the Faculty Board of Examiners or the Head of the Department concerned shall determine.
(5) Candidates who do not pass in a unit of study shall, unless exempted by the Faculty, again attend lectures and other classes and complete the prescribed written and other work in all such units of study in which they are permitted to re-enrol.

(6) Candidates who repeat any unit of study shall not be eligible for any prize or scholarship awarded in connection with the examination for such a unit of study.
(7) Subject to the provisions of section 4(l)(ix), the award of a Pass (Concessional) in a unit of study entitles the candidate to be credited with the full number of credit points for that unit of study.

Credit for other units of study

10.(1) Subject to the limitations on total credit given in section 10(2), candidates may be given credit for a unit of study which they have completed in another recognised program provided that:
(i) the unit of study was completed not more than nine years before admission to candidature in the Faculty;
(ii) the unit of study was completed with a result equivalent to Pass or better (not Pass (Concessional));
(iii) if the unit of study was completed at another university or recognised institution after admission to candidature in the Faculty, then permission had been obtained in advance from the Faculty, and either (a) the unit of study content was material not taught in any corresponding unit of study at the University of Sydney, or (b) the candidate was unable for good reason to attend a corresponding unit of study at the University of Sydney;
(iv) where the unit of study is considered by the Faculty to be equivalent to a unit of study described in section 3, then credit shall be given for that equivalent course, and the candidate shall be regarded as having completed that equivalent unit of study for the purposes of these Resolutions;
(v) where the unit of study is considered by the Faculty as appropriate, but no unit of study described in section 3 is considered equivalent, then the candidate shall be given credit for such number of credit points and with such a result as the Faculty may determine in order to provide fair comparison with units of study described in section 3. Credit points credited under this section shall be designated as being in such Subject Areas, and either Junior, Intermediate or Senior, as the Faculty may determine.

(2) Award of credit for units of study shall be limited such that:
(i) the total credit point value which is credited to a candidate in accordance with section 10(1) from units of study in another recognised program, including those for which credit has been abandoned, may not exceed 96;
(ii) tie total credit point value which is credited to a candidate in accordance with section 10(1), from units of study for which either the candidate maintains credit in some other recognised program, or a degree has been conferred, may not exceed 48;
(iii) in satisfying the requirements of section 4, a candidate must have been credited with at least 48 credit points, of which at least 24 are Senior credit points which are in the Subject Area of Computer Science or are listed in Table m(ii) associated with section 4, from units of study which are taken at the University of Sydney.

BCST Advanced Program

11. (1) Notwithstanding sections 4, 5 and 8 of these
Resolutions, a candidate may be accepted into the Advanced Degree Program.
(2) To qualify for the award of the BCST degree in fhe Advanced Degree Program, candidates shall pass all units of study at the first attempt and, except with the permission of the Faculty, shall:
(i) complete an average of at least 24 credit points in each semester of enrolment over the duration of the degree;

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(ii) complete at least 96 credit points from Intermediate and Senior units of study;

(iii) qualify for admission to an Honours unit of study under section 12.

(3) Candidates wishing to graduate in the BCST(Advanced) Degree Program shall

(i) (a) include, in the junior units of study taken, at least 24 credit points from units of study designated as Advanced and/or from studies at Junior level taken under the Faculty's Talented Student Program, as approved from time to time by the Dean under Resolution 6 (2), including at least 12 credit points from Junior units of study in the Science Subject Area of Computer Science; or

(b) qualify for admission to Intermediate units of study designated as Advanced in the Science Subject Area of Computer Science (and/or studies at Intermediate level in the Science Subject Area of Computer Science taken under the Faculty's Talented Student program, as approved from time to time by the Dean under Resolution 6(2)) to a value of at least 16 credit points.

(ii) include in the Intermediate units of study taken, at least 16 credit points designated as Advanced in the Science Subject Area of Computer Science and/or from studies at Intermediate level in the Science Subject Area of Computer Science taken under the Faculty's Talented Student Program, as approved from time to time by the Dean under Resolution 6(2);

(iii) complete at least 48 credit points from Senior units of study, including at least 24 credit points from units of study designated as Advanced which are either in the Science Subject Area of Computer Science or are listed in Table m(ti) of these resolutions, and/or from studies at Senior Level in the Science Subject Area of Computer Science taken under the Faculty's Talented Student Program, as approved from time to time by the Dean under Resolution 6(2);

(iv) in satisfying Section 11 (3) (hi) complete the unit of study COMP 3809.

Admission to Honours units of study

12.(1) In order to qualify for admission to an Honours unit of study candidates shall have qualified for the award of a Pass degree and be considered by the Faculty and the Head of the Department concerned to have the requisite knowledge and aptitude for an Honours unit of study.

(2) With the permission of the appropriate Head of Department and provided the requirements in section 11(1) have been satisfied the following may also be admitted to Honours units of study:

(i) Pass graduates of the University of Sydney

(ii) Pass graduates holding Bachelor degrees or equivalent from such other institutions as the Faculty may from time to time determine.

(3) Candidates may not be enrolled at any one time in Honours units of study from more than one subject area.

(4) Candidates who have qualified for the Honours degree may take, in the next semester or at such later times as the Faculty permits, an additional 48 credit points of Honours units of study from another subject area for which they are qualified.

Honours units of study

13.(1) Candidates for the Honours degree shall complete 48 credit points of Honours units of study, full-time over two consecutive semesters or half-time over four consecutive semesters.

(2) There shall be Honours units of study in Computer Science and Information Systems. With permission of the Faculty, candidates may be allowed to complete an Honours unit of study available in the Faculties of Science, Arts or Economics, provided that the candidate's plan of study is appropriate for the degree.

Classes of Honours and Medal

14.(1) There shall be three Classes of Honours, namely Class I, Class II and Class III, and within Class II there shall be two Divisions, namely Division 1 and Division 2.

(2) A candidate with an outstanding performance in the subject of an Honours unit of study shall, if deemed to be of sufficient merit by the Faculty, receive a bronze medal.

(3) There shall be no re-examination for Honours.

Transitional provisions

15.(1) These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January, 1997.

(2) With the permission of the Faculty candidates who first enrolled for the degree prior to 1997 and have not had a period of suspension or exclusion may until 31 March 2000 choose to qualify for the degree under the old Resolutions.

(3) With the permission of the Faculty candidates who have enrolled for the degree as part-time candidates prior to 1997 may until 31 March 2002 choose to qualify for the degree under the old Resolutions.

(4) With the permission of the Faculty and subject to the restrictions of section 8, candidates who first enrolled for the degree prior to 1997 may qualify for the degree by completing 140 credit points.

Degree of Bachelor of Medical Science

Regulations

Resolutions of the Senate

The following Resolutions governing candidature for the degree of Bachelor of Medical Science have been prescribed by the Senate.

Definitions

1. (1) (i) A *unit of study* shall consist of such lectures, tutorial instruction, essays, exercises, or practical and field work as may be prescribed.

(ii) Each unit of study shall be designated as a *Junior, Intermediate, Senior* or *Honours* level unit of study. In addition certain units of study may be designated as *Advanced* or *Special Studies Program* units of study.

(iii) Junior, Intermediate, Senior and Honours units of study are indicated by unit of study level designations 1000-1999, 2000-2999, 3000-3999 and 4000-4999 respectively, placed immediately after the name of the unit of study.

(iv) Except as provided in section 7, candidates who have completed a unit of study shall have credit points credited towards the completion of a degree in accordance with the credit point value of the unit of study as described in section 3 of these Resolutions.

(2) To *'complete a unit of study'* and derivative expressions mean:

(i) to attend the lectures and the meetings for tutorial instructions, if any;

(ii) to complete satisfactorily the essays, exercises and the practical and field work, if any; and

(iii) to pass the examination of the unit of study.

(3) *Qualifying unit of study* means a unit of study which must be completed with a result of Pass or better [not a Pass (Concessional) - see sections 7(2) and 9(7)].

(4) *Prerequisite unit of study* means a unit of study other than a qualifying unit of study in a subject which, except with the permission of the Head of the Department concerned, must have been completed prior to a candidate taking a unit of study for which it is a prerequisite.

(5) *Corequisite unit of study* means a unit of study which unless previously completed or except with the permission of the Head of Department concerned, must be taken concurrently with the unit of study for which it is a corequisite.

Grades of award

2. The degree shall be awarded in two grades, namely the Pass degree and the Honours degree.

Units of study for Pass degree

3. Units of study for the degree shall

(1) have such names,

(2) be in such subjects,

(3) have such credit point values, and

(4) have such qualifying, prerequisite and corequisite units of study as are set out in Table IV associated with this section.

Requirements for Pass degree

4. To qualify for the Pass degree a candidate shall:

(1) except as provided in section 10(3) complete 48 credit points from Junior units of study, 48 credit points from Intermediate units of study including 40 credit points of core units of study and 8 credit points of elective units of study, and 48 credit points from Senior units of study including 12 credit points of core units of study and 36 credit points of elective units of study, as set out in Table IV in section 3;

(2) gain credit totalling at least 144 credit points, not more than 16 credit points of which shall be credited from units of study in which the grade of Pass (Concessional) (or its predecessor prior to Second Semester 1997, Terminating Pass) has been awarded;

(3) not have any units of study credited more than once for the degree.

Restrictions on enrolment

5. (1) Except with the permission of the Faculty, candidates may not take the Intermediate core unit of study until they have completed all the Junior units of study prescribed by the Faculty as qualifying units of study as set out in section 3.

(2) Except with the permission of the Faculty, candidates may not take a Senior unit of study

(i) until they have gained credit for the 40 core credit points in the Intermediate program, and

(ii) until they have completed the Intermediate units of study, if any, prescribed as prerequisites for the Senior unit of study, as set out in section 3.

(3) The enrolment by candidates in the degree will be subject to a quota. The enrolment by candidates in some Senior elective units of study may be limited by the exigencies of the timetable and some Senior elective units of study may also be subject to a quota.

(4) No credit points may be credited for the degree from more than one of such units of study as the Faculty may deem to be mutually exclusive (listed in column (e) of Table IV associated with section 3), except that where a candidate enrols in a unit of study which has substantial content in common with another unit of study which was previously completed, that candidate shall undertake alternative assessed work as determined by the Head of the Department concerned.

(5) Where a candidate enrols in a unit of study which is the same as, or has substantial content in common with, a unit of study which was previously attempted but was not completed satisfactorily, the Head of the Department concerned may exempt the candidate from certain of the unit of study requirements, on receipt of evidence that the student has previously demonstrated competence to perform those requirements.

Enrolment in units of study not in the Table

6. A candidate of exceptional merit may, under special circumstances and with the permission of the Dean, undertake studies within the Faculty other than those units of study specified in Table IV accompanying section 3, and upon completion of those studies have them counted towards the degree. The candidate may be given credit of up to 40 credit points for these studies which will be designated by the Dean as Junior, Intermediate or Senior. Such credit points shall count towards the number of credit points required for the degree in accordance with section 3.

Upgrade of units of study

7. (1) A candidate may not enrol in a unit of study which was previously completed with a grade of Pass or better.

(2) Candidates who have been awarded a Pass (Concessional) in any unit of study may enrol in that unit

of study again. On completion of that unit of study such candidates will not be credited with any further credit points for that unit of study unless the unit of study is completed at least at Pass level and the credit points had not previously been credited in accordance with section 4(2).

Time limits, Suspension

8. (1) Except with the permission of the Faculty a candidate must complete the requirements for award of the degree within ten years of admission to candidature. This section applies to all candidates first enrolling in the degree after 1995, and applies from 1998 to candidates who first enrolled in the degree before 1996.

(2) A candidate must re-enrol each year unless the Faculty has approved suspension of candidature. Candidature lapses if a candidate has not obtained approval for suspension and does not re-enrol. Candidates whose candidature has lapsed must be selected for admission again before they can re-enrol.

(3) Except with the prior permission of the Faculty a candidate shall not be granted a suspension of candidature in order to enrol in another course of tertiary study. Candidature shall lapse if a candidate enrols in another course of tertiary study after having been granted a suspension of candidature.

Unit of study assessment

9. (1) Candidates shall be tested by written or oral examinations, exercises, essays or practical work or any combination of these, and the results of such tests may be taken into account by the Faculty Board of Examiners in detenmning the final results for a unit of study.

(2) In all units of study, passes may be graded into High Distinction, Distinction, Credit, Pass and Pass (Concessional). The grades High Distinction, Distinction or Credit indicate work of a standard higher than that required for a Pass.

(3) Where a Department offers a unit of study at two levels the performance of students in the two levels in terms of comparability of quality of work will be matched by that Department so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade obtained at the other level.

(4) Candidates who have been prevented by duly certified illness or misadventure from sitting for the whole or part of a unit of study assessment may be tested at such times and in such way as the Head of the Department concerned or the Faculty Board of Examiners shall determine.

(5) Candidates who do not pass in a unit of study shall, unless exempted by the Faculty, again attend lectures and other classes and complete the prescribed written and other work in all such units of study in which they are permitted to re-enrol.

(6) Candidates who repeat any unit of study shall not be eligible for any prize or scholarship awarded in connection with the examination for such a unit of study.

(7) Subject to the provisions of section 4(2), the award of a Pass (Concessional) in a unit of study entitles the candidate to be credited with the full number of credit points for that unit of study.

Credit for other units of study

10.(1) Subject to the limitations on total credit given in section 10(2), candidates may be given credit for a unit of study which they have completed in another recognised program provided that:

(i) the unit of study was completed not more than nine years before admission to candidature in the Faculty;

(ii) the unit of study was completed with a result equivalent to Pass or better (not Pass (Concessional));

(hi) if the unit of study was completed at another university or recognised institution after admission to candidature in the Faculty, then permission had been obtained in advance from the Faculty, and the candidate was unable for good reason to attend a corresponding unit of study at the University of Sydney;

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(iv) where the unit of study is considered by the Faculty to be equivalent to a unit of study listed in the Tables associated with section 3, then credit shall be given for that equivalent unit of study, and the candidate shall be regarded as having completed that equivalent unit of study for the purposes of these Resolutions.

(2) Award of credit for units of study shall be limited such that:

(i) the total credit point value which is credited to a candidate in accordance with section 10(1) from units of study in another recognised program, including those for which credit has been abandoned, may not exceed 96;

(ii) the total credit point value which is credited to a candidate in accordance with section 10(1), from units of study for which either the candidate maintains credit in some other recognised program, or a degree has been conferred, may not exceed 48;

(iii) in satisfying the requirements of section 4, a candidate must have been credited with at least 48 credit points, of which at least 24 are Senior credit points, from units of study which are listed in Table IV and taken at the University of Sydney.

(3) Candidates who have previously completed studies which are considered by the Faculty to be acceptable alternatives to any Junior units of study listed in Table IV associated with section 3 may be given unspecified credit and shall be regarded as having completed such Junior units of study in the Table for the purposes of these Resolutions.

Admission to Honours units of study

11.(1) In order to qualify for admission to an Honours unit of study candidates shall have qualified for the award of a Pass degree and be considered by the Faculty and the Head of the Department concerned to have the requisite knowledge and aptitude for an Honours unit of study.

(2) With the permission of the appropriate Head of Department and provided the requirements in section 11(1) have been satisfied, the following may also be admitted to Honours units of study:

(i) Pass graduates in Medical Science of the Faculty of Science;

(ii) Pass graduates holding Bachelor degrees or equivalent from other such institutions as the Faculty may from time to time determine.

(3) Candidates may not be enrolled in more than one Honours unit of study at any one time.

(4) Candidates who have qualified for the Honours degree may take, in the next semester or at such later times as the Faculty permits, an additional Honours unit of study for which they are qualified.

Honours units of study

12.(1) Candidates for the Honours degree shall complete an Honours unit of study, full-time over two consecutive semesters.

(2) On the recommendation of the Head of Department concerned the Faculty may permit a candidate to undertake an Honours unit of study half-time over four consecutive semesters. This permission will be granted only if the Faculty is satisfied that the candidate is unable to attempt the unit of study on a full-time basis.

(3) There shall be an Honours unit of study in the following subjects: Anatomy, Biochemistry (Molecular Biology), Biology (Genetics), Cell Pathology, Histology and Embryology, History and Philosophy of Science, Immunology, Infectious Diseases, Microbiology, Pharmacology, Physiology.

Classes of Honours and Medal

13.(1) There shall be three classes of Honours, namely Class I, Class II, and Class III, and within Class II there shall be two divisions, namely Division 1 and Division 2.

(2) A candidate with an outstanding performance in the subject of an Honours unit of study shall, if deemed to be of sufficient merit by the Faculty, receive a bronze medal.

(3) There shall be no re-examination for Honours.

Degree of Bachelor of Pharmacy

Resolutions of Senate

The following Resolutions governing candidature for the degree of Bachelor of Pharmacy have been prescribed by the Senate.

Definitions

1. For the purposes of these Resolutions:

(1) (i) A unit of study shall consist of lectures together with such tutorial instruction, essays, exercises, assignments, field work or practical work as may be prescribed.
(ii) Each unit of study shall be designated as a First Year unit of study, a Second Year unit of study, a Third Year unit of study or a Fourth Year unit of study, as shown in the Table of these Resolutions.

(2) To 'complete a course' and derivative expressions mean:

(i) to attend the lectures and the meetings, if any, for tutorial instructions;
(ii) to complete satisfactorily the essays, exercises, assignments, field work and the practical work, if any; and
(iii) to pass the examinations of the unit of study.

(3) A *qualifying unit of study,* means a unit of study which, except with the permission of the Faculty, must be completed with the result of pass or better (not Pass (Concessional)) before enrolment in the unit of study for which it qualifies.

(4) *A prerequisite unit of study* means a unit of study other than a qualifying unit of study which, except with permission of the Head of Department concerned, must have been completed with the result of Pass (Concessional) or better prior to a candidate enrolling in a unit of study for which it is a prerequisite.

(5) A *corequisite unit of study* which unless previously completed must, except with permission of the Head of Department concerned, be taken in the same academic year as the unit of study for which the Faculty has declared it a corequisite.

Units of study for the degree

2. Units of study for the degree shall—

(1) be in such subjects,
(2) have such credit point values, and
(3) have such qualifying, prerequisite and corequisite units of study as are set out in Table V associated with these Resolutions.

Qualification for BPharm degree

3. (1) To complete the requirements for the degree a candidate shall gain 192 credit points by completing the First Year, Second Year, Third Year and Forth Year units of study as set out in Table V. No more than 28 credit points shall be counted towards the degree total for units of study in which the grade Pass (Concessional) was awarded in accordance with 3 (2) to 3 (4) below.

(2) No more than 12 credit points at the First Year level shall be counted towards the degree total for units of study in which the grade of Pass (Concessional) was awarded.

(3) No more man 10 credit points at the Second Year Level shall be counted towards the degree total for units of study in which the grade of Pass (Concessional) was awarded.

(4) No more than 6 credit points at the Third Year Level shall be counted towards the degree total for units of study in which the grade of Pass (Concessional) was awarded.

(5) No credit points at the Fourth Year Level shall be counted towards the degree with the grade of Pass (Concessional).

(6) No unit of study may be credited towards the degree more than once.

Enrolment in units of study

4. (1) In the first year of attendance candidates, unless granted credit in accordance with section 8, shall enrol in

all the First Year units of study listed in Table V associated with section 3.

(2) Except with the permission of the Faculty and subject to the exigencies of the timetable, candidates in subsequent years of attendance shall enrol in the maximum number of prescribed units of study for which they are qualified, provided that they may not take units of study totalling in excess of 52 credit points.

Restrictions on enrolment

5. (1) Except with the permission of the Faculty, candidates may not take a Second Year unit of study—
   (i) until they have gained credit for at least 24 credit points in First Year units of study, and
   (if) until they have completed the First Year units of study, if any, prescribed by the Faculty as qualifying units of study or prerequisites for the Second Year unit of study, as set out in Section 3.

(2) Except with the permission of the Faculty candidates may not take a Third Year course—
   (i) until they have gained credit for at least 18 credit points derived from Second Year units of study, and
   (if) until they have completed all the First Year units of study, and all the Second Year units of study, if any, prescribed by the Faculty as qualifying units of study or prerequisites for the Third Year unit of study, as set out in Section 3, and all the First Year units of study.

(3) Except with the permission of the Faculty candidates may not take a Fourth Year unit of study—
   (i) until they have gained credit for at least 18 credit points derived from Third Year units of study, and
   (if) until they have completed all the Second Year units of study, and all the Third Year units of study, if any, prescribed by the Faculty as qualifying units of study or prerequisites for the Fourth Year unit of study, as set out in Section 3, and all the Second Year units of study.

(4) Candidates may not take a higher unit of study in any subject without having previously completed the lower unit of study, if any, in the same subject.

(5) The enrolment by candidates in units of study shall be limited by the exigencies of the timetable.

Time limits, Suspension

6. (1) Except with the permission of the Faculty a candidate must complete the requirements for award of the degree within ten calendar years of admission to candidature.

(2) A candidate must re-enrol each calendar year unless the Faculty has approved suspension of candidature. Candidature lapses if a candidate has not obtained approval for suspension and does not re-enrol. Candidates whose candidature has lapsed must be selected for admission again before they can re-enrol.

(3) Except with the prior permission of the Faculty a candidate shall not be granted a suspension of candidature in order to enrol in another course of tertiary study. Candidature shall lapse if a candidate enrols in another unit of course of tertiary study after having been granted a suspension of candidature.

Unit of study assessment

7. (1) Candidates may be tested by written and oral class examinations, oral examinations, assignments, exercises, essays or practical work or any combination of these, and the results of such tests may be taken into account by the Faculty Board of Examiners in detennining the final results for a unit of study.

(2) In all units of study, other than those for which the grades of 'Satisfied Requirements' or 'Fail' may be awarded, work of a higher standard than that required for an ordinary pass may be recognised by the award of High Distinction, Distinction or Credit.

(3) Candidates who have been prevented by duly certified illness or misadventure from sitting for the whole or part of a unit of study assessment may be tested at such times and in such way as the Head of Department concerned or the Faculty Board of Examiners shall determine.

(4) Candidates who do not pass in a unit of study shall, unless exempted by the Faculty, again attend lectures and other classes and complete the prescribed written and other work in all such units of study in which they are permitted to re-enrol.

(5) Candidates who present themselves for re-examination in any unit of study shall not be eligible for any prize or scholarship awarded in connection with such examination.

Credit for units of study

8. (1) Candidates who have previously completed studies which are considered by the Faculty to be equivalent to any unit of study listed in the Table associated with section 3 may be given credit for that unit of study providing that:
   (i) in the case of graduates, the total credit point value of the units of study so credited may not exceed 68;
   (ii) in the case of students who have completed units of study in another tertiary program without graduating and who have abandoned credit in that program for the units of study on the basis of which credit is sought, any number of units of study may be credited;
   (iii) the units of study were completed not more than nine years before admission to candidature in the Faculty.

(2) Candidates who have been given credit for units of study listed in the Table, in accordance with section 8(1), shall be regarded as having completed such units of study for the purposes of these Resolutions.

Grades of award

9. The degree shall be awarded in two grades, namely, Pass and Honours.

(a) A weighted average mark (WAM) will be calculated for each candidate as an overall measure of performance in the degree; 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 points, with all attempts at units of study being included in the calculation, except where units of study are discontinued with permission; the formula is as follows:

$$S\ (W_c \text{ x } M_c)$$

where Wc is the weighted credit point value i.e. the product of the credit point value and the level of weighting of 1, 2, 3, or 4 for a first year unit of study, second year unit of study, third year unit of study or a fourth year unit of study respectively; and where Mc is the greater of 45 or the mark out of 100 for the unit of study.

(b) The degree will be awarded with the following grades as determined by the Faculty Board of Examiners
   (i) with class 1 Honours
   (ii) with class 2 Honours, division 1 or 2
   (iii) pass.

(c) Except with the permission of the Faculty, candidates of more than four years standing in the degree shall not be awarded the degree with Honours.

(d) A candidate who has an outstanding performance in the degree and who has completed two Advanced units of study shall, if deemed to be of sufficient merit by the Faculty, receive a bronze medal.

Candidates enrolled before 1997

10. (1) A person who has enrolled as a candidate for the degree of Bachelor of Pharmacy before 1 January 1997 may complete the requirements for the degree in accordance with the Resolutions in force at the time the candidate commenced that degree provided that the candidate completes the requirements for the degree by 31 December 2001 or such later date as the Faculty may approve in special cases; and that if a unit of study specified in those Resolutions is discontinued the Faculty may permit the candidate to substitute a unit of study or units of study deemed by the Faculty to be equivalent to the discontinued course.

BMedSc
BPharm
Undergraduate degree regulations

(2) Where a candidate proceeding pursuant to subsection (1) fails to complete the requirements for the degree before 31 December 2001 the candidate shall complete the requirements for the degree under such conditions as may be determined from time to time by the Dean.

Degree of Bachelor of Psychology

Regulations

Resolutions of the Senate

The following Resolutions governing candidature for the degree of Bachelor of Psychology have been prescribed by the Senate.

Definitions

1. For the purposes of the Resolutions:
   (1) (i) A unit of study shall consist of such lectures, tutorial instruction, essays, exercises, or practical and field work as may be prescribed.
   (ii) Each unit of study shall be designated as a Junior, Intermediate, Senior or Honours level unit of study. In addition certain units of study may be designated as Advanced or Special Studies Program units of study.
   (iii) Junior, Intermediate, Senior and Honours units of study are indicated by unit of study level designations 1000-1999, 2000-2999, 3000-3999 and 4000-4999 respectively; a Junior unit of study is one for which the qualifying units of study, prerequisites or assumed knowledge are non-tertiary qualifications or the co-requisites are other Junior units of study; an Intermediate unit of study is one for which the qualifying units of study or prerequisites are Junior or intermediate units of study or the corequisites are other Intermediate units of study; a Senior unit of study is one for which the qualifying units of study or prerequisites are Intermediate or Senior units of study or the corequisites are other Senior units of study.
   (iv) Except for Honours units of study, each unit of study shall be confined to one semester in duration, with assessment being completed during that semester.
   (v) Except as provided in section 4(l)(xiv), each unit of study shall be designated as belonging to one or more Science Subject Areas, as determined by the Faculty. The approved Science Subject Areas are:
   Agricultural Chemistry
   Anatomy and Histology
   Biochemistry
   Biology
   Cell Pathology
   Chemistry
   Computer Science
   Engineering Science
   Geography
   Geology
   Geophysics

   History and Philosophy of Science
   Immunology
   Information Systems
   Marine Science
   Mathematics
   Microbiology
   Nutritional Science
   Pharmacology
   Physics
   Physiology
   Psychology
   Soil Science
   Statistics
   (vi) Except as provided in section 7(1), candidates who have completed a unit of study shall have credit points credited towards the completion of a degree in accordance with the following: each unit of study shall be of 3, 4, 6, 8, or 12 credit points value; a unit of study

may comprise modules of smaller credit point value which shall be taken in various combinations as determined by the Head of the Department concerned.
(2) To 'complete a unit of study' and derivative expressions mean:
   (i) to attend the lectures and the meetings for tutorial instructions, if any;
   (ii) to complete satisfactorily the essays, exercises and the practical and field work, if any; and
   (iii) to pass the examinations of the unit of study.
(3) A qualifying unit of study means a unit of study which, except with the permission of the Faculty, must be completed with a result of Pass or better [not Pass (Concessional) - see sections 9(2) and 9(7)] before enrolment in the unit of study for which it qualifies.
(4) A prerequisite unit of study means a unit of study other than a qualifying unit of study which, except with the permission of the Head of the Department concerned, must have been completed with a result of Pass (Concessional) or better [see sections 9(2) and 9(7)] prior to a candidate enrolling in a unit of study for which it is a prerequisite.
(5) A corequisite unit of study means a unit of study which, unless previously completed or except with the permission of the Head of the Department concerned, must be taken concurrently with the unit of study for which it is a corequisite.

Grades of Award

2. The degree shall be awarded as an Honours degree.

Units of study

3. Units of study for the degree shall
   (1) have such names,
   (2) be in such subjects,
   (3) be in such Science Subject Areas,
   (4) have such credit point values, and
   (5) have such qualifying, prerequisite and corequisite units of study as are determined from time to time by the Faculty, and are set out in Table I associated with the BSc.

Requirements for the degree

4. To qualify for the degree, candidates must
   (1) complete units of study giving credit for a total of at least 144 credit points, and maintain a yearly average mark of at least 65 where:
      (i) 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.
      (ii) at least 16 credit points are from Intermediate units of study in the Science Subject area of Psychology at an average grade of Distinction or better.
      (iii) at least 36 credit points are from Senior units of study in the Science Subject Area of Psychology (including PSYC3201 and PSYC3202) and, except with the permission of Faculty, at an average grade of Distinction or better.
      (iv) at least 12 credit points are from units of study in the Science Subject Areas of Mathematics and Statistics;
      (v) at least 36 credit points are from Junior units of study in Science Subject Areas;
      (vi) at least 16 credit points are from Intermediate units of study in a Science Subject Area other than Psychology.
      (vii) at least 72 credit points are from Intermediate and Senior units of study in Science Subject Areas;
      (viii) no more than 32 credit points are from Intermediate units of study which belong to a single Science Subject Area;
      (ix) no more than 48 credit points are from Senior units of study which belong to a single Science Subject Area;
      (x) no more than 16 credit points are from Intermediate units of study and no more than 24 credit points are from Senior units of study which belong to the Science Subject Areas of Anatomy and Histology, Cell

Pathology, Immunology, Pharmacology, and Physiology;

(xi) no more than 16 credit points are from Intermediate units of study which belong to the Science Subject Area of Engineering Science;

(xii) no more than 28 credit points are from units of study in which the grade of Pass (Concessional) (or its predecessor prior to Second Semester 1997, Terminating Pass) was awarded;

(xiii) no more than 28 credit points are from units of study not in Science Subject Areas, taken from not more than two subject areas but excluding those units of study which the Faculty has deemed to be mutually exclusive with units of study offered for the Bachelor of Science degree; and

(2) complete 48 credit points from fourth year (Honours) units of study in the Science Subject Area of Psychology with a grade of honours.

(3) No unit of study may be credited more than once for the degree nor be used more than once in satisfying the conditions in 4(l)(vi)(viii) and (ix).

(4) No credit points may be credited for the degree from more than one of such units of study as the Faculty may deem to be mutually exclusive (listed in column (e) of Table I associated with section 3), except that where a candidate enrols in a unit of study which has substantial content in common with another unit of study which was previously completed, that candidate shall undertake alternative assessed work as determined by the Head of the Department concerned.

(5) Where a candidate enrols in a unit of study which is the same as, or has substantial content in common with, a unit of study which was previously attempted but was not completed satisfactorily, the Head of the Department concerned may exempt the candidate from certain of the unit of study requirements, on receipt of evidence that the candidate has previously demonstrated competence to perform those requirements.

Restrictions on enrolment

5. (1) Except with the permission of the Faculty, candidates may not take in any one semester units of study with a total number of credit points in excess of 28.

(2) The choice of units of study made by a candidate shall be limited by the exigencies of the timetable provided that candidates who have completed at least 36 credit points of Junior units of study and who seek to enrol in two units of study which are given wholly or partly at the same time may be granted, by the Heads of the Departments concerned, permission to attend equivalent units of study or parts of units of study given at another time.

Enrolment in units of study not in Table I

6. (1) A candidate of merit may, under special circumstances and with the permission of the Faculty, enrol in a unit of study other than those specified in Table I associated with section 3. Credit points will be counted from such a unit of study towards the maximum of 28 credit points specified under section 4 (1)(xi).

(2) A candidate of exceptional merit may, under special circumstances and with the permission of the Dean, undertake studies within the Faculty other than those units of study specified in Table I accompanying section 3, and upon completion of those studies have them counted towards the degree. The candidate may be given credit for these studies of up to 40 credit points, which will be designated by the Dean as Junior, Intermediate or Senior. Such credit points shall count towards the number of credit points required for the degree in accordance with section 4(1).

Upgrade of units of study

7. (1) A candidate may not enrol in a unit of study which was previously completed with a grade of Pass or better.

(2) Candidates who have been awarded a Pass (Concessional) in any unit of study may enrol in that unit of study again. On completion of that unit of study such candidates will not be credited with any further credit points for that unit of study unless the unit of study is completed at least at Pass level and the credit points had not previously been credited in accordance with section 4(l)(xii).

Time limits, Suspension, Part-time study

8. (1) Except with the permission of the Faculty a candidate must complete the requirements for award of the degree within ten calendar years of admission to candidature. This section applies to all candidates first enrolling in the degree after 1995, and applies from 1998 to candidates who first enrolled in the degree before 1996.

(2) A candidate must re-enrol each year unless the Faculty has approved suspension of candidature. Candidature lapses if a candidate has not obtained approval for suspension and does not re-enrol. Candidates whose candidature has lapsed must be selected for admission again before they can re-enrol.

(3) Except with the prior permission of the Faculty a candidate shall not be granted a suspension of candidature in order to enrol in another course of tertiary study. Candidature shall lapse if a candidate without prior permission of Faculty enrols in another course of tertiary study after having been granted a suspension of candidature.

(4) Candidates who in any semester intend to proceed towards the degree of Bachelor of Psychology by part-time study shall indicate this intention when enrolling.

(5) Candidates proceeding by part-time study shall not in any one semester take units of study with a total credit point value of more than 17 credit points.

Unit of study assessment

9. (1) Candidates may be tested by written and oral class examinations, exercises, essays or practical work or any combination of these, and the results of such tests may be taken into account by the Faculty Board of Examiners in determining the final results for a course.

(2) In all units of study passes may be graded into High Distinction, Distinction, Credit, Pass and Pass (Concessional). The grades High Distinction, Distinction or Credit indicate work of a standard higher than that required for a Pass.

(3) Where a Department offers a unit of study at two levels the performance of candidates in the two levels in terms of comparability of quality of work will be matched by that Department so that a grade obtained at one level indicates a quality of work comparable with that required for the same grade obtained at the other level.

(4) Candidates who have been prevented by duly certified illness or misadventure from sitting for the whole or part of a unit of study assessment may be tested at such times and in such way as the Head of the Department concerned or the Faculty Board of Examiners shall determine.

(5) Candidates who do not pass in a unit of study shall, unless exempted by the Faculty, again attend lectures and other classes and complete the prescribed written and other work in all such units of study in which they are permitted to re-enrol.

(6) Candidates who repeat any unit of study shall not be eligible for any prize or scholarship awarded in connection with the examination for such a unit of study.

(7) Subject to the provisions of section 4(l)(xii), the award of a Pass (Concessional) in a unit of study entitles the candidate to be credited with the full number of credit points for that unit of study.

Credit for other units of study

10.(1) Subject to the limitations on total credit given in section 10(2), candidates may be given credit for a unit of study which they have completed in another recognised program provided that:

(i) the unit of study was completed not more than nine years before admission to candidature in the Faculty;

(ii) the unit of study was completed with a result equivalent to Pass or better (not Pass (Concessional));

(iii) if the unit of study was completed at another university or recognised institution after admission to candidature in the Faculty, then permission had been obtained in advance from the Faculty, and either

(a) the unit of study content was material not taught in any corresponding unit of study at the University of Sydney, or

(b) the candidate was unable for good reason to attend a corresponding unit of study at the University of Sydney;

(iv) where the unit of study is considered by the Faculty to be equivalent to a unit of study listed in the Table associated with section 3, then credit shall be given for that equivalent unit of study, and the candidate shall be regarded as having completed that equivalent unit of study for the purposes of these Resolutions;

(v) where the unit of study is considered by the Faculty as appropriate, but no unit of study listed in the Table associated with section 3 is considered equivalent, then the candidate shall be given credit for such number of credit points and with such a result as the Faculty may determine in order to provide fair comparison with units of study listed in Table I. Credit points credited under this section shall be designated as being in such Science Subject Areas, and either Junior, Intermediate or Senior, as the Faculty may determine.

(2) award of credit for units of study shall be limited such that:

(i) the total credit point value which is credited to a candidate in accordance with section 10(1) from units of study in another recognised program, including those for which credit has been abandoned, may not exceed 96;

(ii) the total credit point value which is credited to a candidate in accordance with section 10(1), from units of study for which either the candidate maintains credit in some other recognised program, or a degree has been conferred, may not exceed 48;

(iii) in satisfying the requirements of section 4, a candidate must have been credited with at least 48 credit points, of which at least 24 are Senior credit points, from units of study which are listed in Table I and taken at the University of Sydney.

Admission to Honours units of study

11. In order to qualify for admission to the fourth year (Honours) units of study candidates shall have completed at least 144 credit points of units of study as specified in 4(1).

Classes of Honours and Medal

12.(1) There shall be three Classes of Honours, namely Class I, Class II and Class III, and within Class II there shall be two Divisions, namely Division 1 and Division 2.

(2) A candidate with an outstanding performance in Honours shall, if deemed to be of sufficient merit by the Faculty, receive a bronze medal.

(3) There shall be no re-examination for Honours.

Transitional provisions

13.(1) These Resolutions apply to all candidates for the degree enrolling in units of study after 1 January, 2000.

(2) With the permission of the Faculty candidates who first enrolled for the degree prior to 2000 and have not had a period of suspension or exclusion may until 31 March 2003 choose to qualify for the degree under the old Resolutions.

Postgraduate information

Higher degrees

The higher degrees in the Faculty of Science are:

MSc	Master of Science
MlnfTech	Master of Information Technology
MPsych	Master of Psychology
MNutrDiet	Master of Nutrition and Dietetics
MNutrSc	Master of Nutritional Science
MSc(EnvironSc)	Master of Science (Environmental Science)
MSc(Micr&An)	Master of Science (Microscopy and Microanalysis)
PhD	Doctor of Philosophy
DSc	Doctor of Science

Diplomas

The Diplomas in the Faculty of Science are:

GradDipInfTech	Graduate Diploma in Information Technology
GradDipSc	Graduate Diploma in Science
GradDipSc (EnvironSc)	Graduate Diploma in Science (Environmental Science)
GradDipSc (Micr&An)	Graduate Diploma in Science (Microscopy and Microanalysis)
GradDipSc (Psych)	Graduate Diploma in Science (Psychology)

Certificates

The Certificates in the Faculty of Science are:

GradCertlnfTech	Graduate Certificate in Information Technology
GradCertSc (Micr&An)	Graduate Certificate in Science (Microscopy & Microanalysis)

Prospective candidates for these awards should consult with the Head of the Department most closely concerned as early as possible.

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 *University of Sydney Calendar, 1998. Vol 1, Statutes and Regulations.* 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)

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 relating to the degree of Doctor of Philosophy are printed in *University of Sydney Calendar, 1998. Vol 1, Statutes and Regulations.* Applicants should normally hold a master's degree or a bachelor's degree with first or second class honours of the University of Sydney, or an equivalent qualification from another university or institution.

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

In the case of full-time candidates, the minimum period of candidature 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 five 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 seven years.

Degrees of Master

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 unit of study for 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 (requiring 48 credit points per year for full-time candidature).

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

Resolutions of the Senate
Master of Science

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 either the degree of Bachelor of Science or the degree of Bachelor of Pharmacy, 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 Chapter 10 of the by-laws.

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 Chapter 10, 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.[1]
(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.

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1. The Faculty has resolved that, for the time being, recreation leave shall be four weeks per year and that substantial employment shall mean more than six hours per week or 180 hours per annum, whichever shall be less.

(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,
(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 on the recommendation of the Head of the Department concerned, 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.
(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,
(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 Information Technology (MInfTech)

Resolutions of the Senate
Master of Information Technology (MInfTech)

Eligibility for admission
1. An applicant for admission to candidature for the degree shall, except as provided in Chapter 10 of the by-laws
(i) have completed a three-year degree majoring in Computer Science or equivalent and achieved a grade of Credit or better in the final year of the Computer Science component; or

(ii) have completed a three-year degree majoring in Computer Science or equivalent and have two years' experience in the Information Technology industry, in roles such as Andysis/Prograrnming, Network Management, Technical Support and/or Systems Integration.

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 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

3. (1) A candidate for the degree shall proceed by completing units of study and a project as prescribed by the Faculty.

(2) A unit of study shall consist of such lectures, seminars, tutorial instruction, essays, exercises or practical work as may be prescribed.

(3) In these resolutions the expression 'to *complete a unit of study'* 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 the examinations of the unit of study.

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 sixth semester of candidature, unless otherwise determined by the Faculty.

(2) A part-time candidate shall complete the requirements for the degree not earlier than the end of the sixth semester and not later than the end of the tenth semester of candidature, unless otherwise determined by the Faculty.

Requirements for the degree

6. Candidates for the degree are required to complete satisfactorily:

(i) 48 credit points of units of study covering material new to the candidate and selected from units of study satisfying the conditions approved from time to time by the Faculty; and

(ii) a supervised project component worth 24 credit points.

Examination

7. On completion of requirements for the degree, the Faculty shall determine the results of the candidature, on the recommendation of the Head of the Basser Department of Computer Science.

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) where the candidate does not show good cause, terminate the candidature.

Credit

9. A candidate who, before admission to candidature, has spent time in graduate study and has completed coursework considered by the Faculty to be equivalent to units of study prescribed for the degree, may receive credit of up to 24 credit points towards the requirements for the degree, provided that the completed work was not counted towards the requirements of another degree.

Master of Nutrition and Dietetics (MNutrDiet)

Resolutions of the Senate
Master of Nutrition and Dietetics (MNutrDiet)

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 Board of Studies, may admit to candidature for the degree

(i) graduates of the University of Sydney who have, unless exempted by the Board of Studies, completed acceptable units of study in Biochemistry and Physiology;

(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 Board of Studies 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 Board of Studies; and

(c) undertake a project approved by the Head of the Human Nutrition Unit. The result of this project shall be presented for examination in the form of a long essay.

4. A candidate admitted under section 2(l)(ii):

(a) may be granted credit for up to three semesters towards the degree; and

(b) will undertake a project approved by the Head of the Human Nutrition Unit. The result of this project shall be presented for examination in the form of a long essay.

Examination

5. On completion of the requirements for the degree, the Faculty shall determine the result of the candidature, on the recommendation of the Board of Studies, acting on a report from the Head of the Human Nutrition Unit.

Master of Nutritional Science (MNutrSc)

Resolutions of the Senate
Master of Nutritional Science (MNutrSc)

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.

MSc
MInfTech
MNutrDiet
MNutrSc

Postgraduate regulations

Eligibility for admission

2. (1) The Faculty of Science, on the recommendation of the Board of Studies, may admit to candidature for the degree graduates of the University of Sydney, who have, unless exempted by the Board of Studies, completed acceptable units of study in Biochemistry and Physiology.

(2) The Academic Board, on the recommendation of the Board of Studies 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 Board of Studies may prescribe.

Method of progression and degree requirements

3. (l)(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 Board of Studies 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;

(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 mil-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 Board of Studies, acting on a report from the Head of the Human Nutrition Unit.

Master of Psychology (MPsych)

Resolutions of the Senate
Master of Psychology (MPsych)

Award of the Degree

1. The degree of Master of Psychology shall be awarded in two grades, namely Pass and, in the case of an outstanding candidate, Pass with Merit.

Eligibility for admission

2. An applicant for admission to candidature for the degree shall, except as provided in Chapter 10 of the by-laws

(a) have completed units of study in Abnormal Psychology acceptable to the Faculty; and

(b) be a Bachelor of Arts or Bachelor of Science of the University of Sydney; and

(c) have obtained fourth year Honours in Psychology; or

(d) be a graduate of the University other than as specified in (b) and hold qualifications considered by the Faculty to be equivalent to fourth year Honours in Psychology at the University of Sydney; or

(e) have completed the requirements for the degree of Master of Science in Psychology or Master of Arts (Honours) or Master of Philosophy in Psychology of the University of Sydney; and

(f) have satisfied the Faculty of their personal suitability for the practice of clinical psychology. When evaluating personal suitability the Faculty may take into account previous relevant experience, reports of the referees and the outcome of selection interviews.

Method of progression

3. (1) A candidate for the degree shall proceed by completing units of study as prescribed by the Faculty.

(2) A unit of study shall consist of lectures, together with such seminars, tutorial instruction, essays, exercises or practical work as may be prescribed.

(3) In these resolutions the expression 'to complete a unit of study' means

(a) to attend the lectures, and the meetings, if any, for seminars or tutorial instruction;

(b) to complete satisfactorily the essays, exercises and practical work if any; and

(c) to pass the examinations of the unit of study.

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 later than the end of the second year of candidature, unless otherwise determined by the Faculty.

(2) A part-time candidate shall complete the requirements for the degree not later than the end of the fourth year of candidature, unless otherwise determined by the Faculty.

Requirements for the Degree

6. The following are the requirements for the degree of Master of Psychology:

(1) Candidates for the degree are required to complete satisfactorily

(a) a coursework component according to the syllabus approved by the Faculty;

(b) a practicum component involving both training in therapeutic and assessment techniques and field placements; and

(c) a research project and submit a dissertation on that project.

(2) The requirements for the degree shall be completed in two Parts, namely Part I and Part n.

(3) A candidate must complete Part I to the satisfaction of the Faculty before proceeding to Part H

(4) Full-time candidates are required, except with permission of the Faculty, to complete the requirements of Part I of the course within one year of first enrolment and to complete Part II of the course within two years of first enrolment.

(5) Part-time candidates are required, except with the permission of the Faculty, to complete the requirements of

Part I within two years of first enrolment and to complete Part II within four years of first enrolment.

Master of Psychology/Doctor of Philosophy[2]

7. A person may proceed concurrently as a candidate for the degrees of Master of Psychology and Doctor of Philosophy. For further details refer to the resolutions of the Senate for the combined award course for the degrees of Master of Psychology and Doctor of Philosophy.

Examination

8. On completion of requirements for the degree, the Faculty shall determine the results of the candidature, on the recommendation of the Head of the Department of Psychology.

Progress

9. The Faculty may

(a) 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

(b) where the candidate does not show good cause, terminate the candidature.

Master of Psychology/PhD (MPsych/PhD)

Qualified students are also able to combine the MPsych and the PhD. For more information, contact the Department directly.[3]

Note: This combined degree is no longer available to new students. It is available only to students accepted into it prior to 1999.

Resolutions of the Senate
Master of Psychology/Doctor of Philosophy

The Resolutions of the Senate relating to candidature for the degrees of Master of Psychology and Doctor of Philosophy shall apply to the combined award course for the degrees of Master of Psychology and Doctor of Philosophy except for sections 1,5,6 and 7 of the resolutions of the Senate relating to the degrees of Master of Psychology and sections 7 and 8 of the resolutions of the Senate relating to the degrees of Doctor of Philosophy, which are replaced by the following:

Award of the degrees

1. (1) The degrees of Master of Psychology shall be awarded in two grades, namely Pass and, in the case of an outstanding candidate, Pass with Merit.

(2) The degrees of Master of Psychology shall only be awarded on satisfactory completion of the requirements for the degrees of Doctor of Philosophy, except as provided by section 15 of the resolutions of the Academic Board relating to the degrees of Doctor of Philosophy.

Time limits

1. (1) A full-time candidate shall complete the requirements for both degrees not earlier than the end of the fourth year of candidature and, unless otherwise determined by the Faculty, not later than the end of the sixth year of candidature.

(2) A part-time candidate shall complete the requirements for both degrees not earlier than the end of the fourth year of candidature and, unless otherwise determined by the Faculty, not later than the end of the seventh year of candidature.

(3) Notwithstanding sub-sections (1) and (2), a candidate who meets the requirements of sections 7(2) and (3) of the Resolutions of the Senate relating to the degrees of Doctor of Philosophy may be permitted to complete the requirements at an earlier date.

Requirements for the Degrees

3. The following are the requirements for the combined award course for the degrees of Master of Psychology and Doctor of Philosophy:

(1) Candidates for the degrees are required

(a) to complete satisfactorily a coursework component according to the syllabus approved by the Faculty;

(b) to complete satisfactorily a practicum component involving both training in therapeutic and assessment techniques and field placements; and

(c) to pursue a course of advanced study and research leading to the submission of a thesis in an area of clinical research as approved by the Head of the Department of Psychology.

(2) The requirements for both degrees shall be completed in three parts, namely Part I, Part IIA and Part m.

(3) A candidate must complete Part I to the satisfaction of the Faculty before proceeding to Part HA.

(4) Full-time candidates are required, except with permission of the Faculty, to complete the requirements of Part I within one year of first enrolment, to complete Part HA within two years of first enrolment and to complete Part HI within six years of first enrolment.

(5) Part-time candidates are required, except with the permission of the Faculty, to complete the requirements of Part I within two years of first enrolment, to complete Part HA within four years of first enrolment and to complete Part HI within seven years of first enrolment.

(6) Part HI of the requirements for the degrees of Master of Psychology is satisfied under sub-section (l)(c) above.

Transfer to Master of Psychology candidature

4. The Head of the Department of Psychology may recommend that a candidate withdraw from candidature for the combined degrees and complete the requirements for the degrees of Master of Psychology under such conditions as the Faculty may determine.

Examination

5. The procedures for the examination and award of the degrees of Doctor of Philosophy (including the provision for transfer to Master's candidature if the degrees is not awarded) shall be as prescribed in the resolutions of the Senate and of the Academic Board relating to that degrees.

6. On completion of Parts I, HA and HI of the requirements for the degrees, and following the award of the degrees of Doctor of Philosophy, the Faculty shall determine the results of the candidature for the degrees of Master of Psychology, on the recommendation of the Head of tie Department of Psychology.

Master of Science (Environmental Science) (MSc(EnvironSc))

Resolutions of the Senate

Master of Science (Environmental Science) (MSc(EnvironSc))

Eligibility for admission

1. An applicant for admission to candidature for the degree shall, except as provided in Chapter 10 of the by-laws

(i) have completed an Honours degree majoring in a Science discipline that has a significant environmental emphasis, or in Environmental Science, or equivalent; or

(ii) have completed the requirements for the Graduate Diploma of Science (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.

MNutrSc
MPsych
MPsych/PhD
MSc(EnvironSc)

Postgraduate regulations

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2. See also Master of Psychology/PhD Resolutions on this page.

3. See also Master of Psychology, Resolutions 7, above.

Method of progression

3. (1) A candidate for the degree shall proceed by completing units of study and a research thesis as prescribed by the Faculty.

(2) A unit of 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.

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, unless otherwise determined by the Faculty.

(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, unless otherwise determined by the Faculty.

Requirements for the degree

6. Candidates for the degree are required to complete satisfactorily:

(i) units of study granting a minimum of 24 credit points covering material new to the candidate and selected from units of study satisfying the conditions approved from time to time by the Faculty; and

(ii) a supervised research project resulting in the submission of a research thesis.

Examination

7. On completion of the requirements for the degree, the Faculty shall determine the results of the candidature, on the recommendation of the Chair of the Program Committee - Environmental Science.

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) where the candidate does not show good cause, terminate the candidature.

Credit

9. A candidate who, before admission to candidature, has spent time in graduate study and has completed coursework considered by the Faculty to be equivalent to units of study prescribed for the degree, may receive credit of up to 24 credit points towards the requirements for the degree, provided that the completed work was not counted towards the requirements of another degree.

Master of Science (Microscopy and Microanalysis) MSc(Micr&An)

Resolutions of the Senate
Master of Science (Microscopy and Microanalysis) MSc(Micr&An)

Eligibility for admission

1. An applicant for admission to candidature for the degree shall, except as provided in Chapter 10 of the by-laws

(i) have completed a degree in Science, Engineering or equivalent; or

(ii) have completed the requirements for the Graduate Diploma of Science (Microscopy and Microanalysis) at credit level.

Availability

2. (1) Admission to candidature may be limited by a quota. In detenrining 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 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 completing units of study and a project as prescribed by the Faculty.

(2) A unit of 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.

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 fifth semester of candidature, unless otherwise determined by the Faculty.

(2) A part-time candidate shall complete the requirements for the degree not earlier than the end of the fourth semester and not later than the end of the eighth semester of candidature, unless otherwise determined by the Faculty.

Requirements for the degree

6. Candidates for the degree are required to complete satisfactorily:

(i) units of coursework granting a minimum of 48 credit points of study selected from units of study satisfying the conditions approved from time to time by the Faculty; and

(ii) supervised projects and essays worth 24 credit points.

Examination

7. On completion of the requirements for the degree, the Faculty shall determine the results of the candidature, on the recommendation of the Head of the School of Physics.

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) where the candidate does not show good cause, terminate the candidature.

Credit

9. A candidate who, before admission to candidature, has spent time in graduate study and has completed coursework considered by the Faculty to be equivalent to units of study prescribed for the degree, may receive credit of up to 48 credit points towards the requirements for the degree, provided that the completed work was not counted towards the requirements of another degree.

Graduate diplomas

Graduate Diploma in Information Technology (GradDiplnfTech)

The Graduate Diploma in Information Technology is a coursework program involving postgraduate study of Computer Science and/or Information Systems. To be admitted, candidates need considerable prior academic study of Computing (to the level of an undergraduate major), or they must have completed the GradCertlnfTech with results at Credit level. To complete the diploma, each student must complete 48 credit points from units of study listed in Table 1

to 4 of the resolutions of the MlnfTech degree. Some of the units are foundational, general surveys of the main concepts in one important sub-field (such as Databases or Networks); other units offer detailed coverage of one Advanced Topic within a subfield. To qualify for the GradDipInfTech, at least 12 credit points must be from "Advanced Topics" units of study.

Students who complete the GradDipInfTech with results at Credit level may be admitted as candidates for the Master of Information Technology degree.

Resolutions of the Senate

Eligibility for admission

1. An applicant for admission to candidature for the award shall, except as provided in chapter 10 of the by-laws,
   (1) have completed a three-year degree, with a major study of Computer Science; or
   (2) have completed the GradCertlnfTech at Sydney University, with an average result of Credit or better, including a Credit or better in at least one unit of study from Table 3 or Table 4 of the resolutions for the MlnfTech degree..

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 Basser Department of Computer Science and the Faculty 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 time of candidacy below, the faculty shall include time previously spent as candidate for the GradCertlnfTech or the MlnfTech degree.
   (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 Faculty.
   (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 eighth semester of candidature, unless otherwise determined by the Faculty.

Resolutions of the Faculty

Method of Progression

1. (1) A candidate for the award 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 or practical work as may be prescribed.
   (3) In these resolutions, the expression "to complete a unit of study" means
   (a) to attend the lectures, and the meetings, if any, for seminars or tutorial instruction;
   (b) to complete satisfactorily the essays, exercises and practical work if any; and
   (c) to pass the examinations of the unit of study.

Availability of units of study

2. Availability of units of study in semesters may vary as determined from time to time by the Faculty.

Requirements for award of the diploma

3. Candidates for the award are required to complete satisfactorily units of study worth at least 48 credit points according to the syllabus approved by the Faculty. Credit may be given for units previously completed within the Graduate Certificate in Information Technology or within

an uncompleted and abandoned candidature for the Master of Information Technology.

Examination

4. On completion of the requirements for the award, the Faculty shall determine the results of the candidature, on the recommendation of the Head of the Basser Department of Computer Science.

Progress

5. 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 degree; and
   (2) where the candidate does not show good cause, terminate the candidature.

Graduate Diploma in Science (GradDipSc)

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 available to candidates who are not eligible to enrol in those courses. Entry to the Graduate Diploma is subject to approval by the relevant Head of Department and confirmation that requirements for the award of the degree of Bachelor of Science, Bachelor of Computer Science and Technology, Bachelor of Medical Science, Bachelor of Pharmacy, Bachelor of Psychology, or an equivalent degree have been met.

Resolutions of the Senate
Graduate Diploma in Science

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 the award course of Bachelor of Science, Bachelor of Computer Science and Technology, Bachelor of Medical Science, Bachelor of Pharmacy or Bachelor of Psychology from the University of Sydney.
   (2) The Academic Board, in accordance with the provisions of Chapter 10 of the by-laws, on the recommendation of the relevant Head of Department 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 (i).

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. (1) A candidate shall engage in a program of work equivalent to that required for completion of the relevant fourth year Bachelor of Science, Bachelor of Pharmacy or Bachelor of Medical Science Honours unit 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 the department concerned, as a part-time student for a period of two years.
   (2) There shall be units of study in the following subjects: Agricultural Chemistry, Anatomy, Applied Mathematics, Biochemistry, Biochemistry (Molecular Biology), Biology, Cell Pathology, Computer Science, Geography, Geology, Geomorphology with Geography, Geophysics, Histology,

History and Philosophy of Science, Immunology, Inorganic Chemistry, Marine Sciences, Mathematical Statistics, Microbiology, Organic Chemistry, Pharmacology, Pharmacy Practice, Physical Chemistry, Physics, Physiology, Psychology, Pure Mathematics, Soil Science, Theoretical Chemistry.

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 Honours Board of Examiners appointed by 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, tenninate the candidature.

Graduate Diploma in Science (Environmental Science)

Graduate Diploma in Science (Microscopy and Microanalysis)

Graduate Diploma in Science (Psychology)

Resolutions of the Senate
Graduate Diploma in Science
(Environmental Science)
Graduate Diploma in Science
(Microscopy and Microanalysis)
Graduate Diploma in Science (Psychology)

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 (Environmental Science):* An applicant who is a holder of the award course of Bachelor of Agricultural Science, Bachelor of Engineering, Bachelor of Science, Bachelor of Veterinary Science or any other award course at the University of Sydney which includes science-based units of study acceptable to the Interdepartmental Committee;

    (b) *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.

    (c) *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 (Environmental Science) and 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.

Graduate Diploma in Science (Environmental Science) (GradDipSc(EnvironSc))

Resolutions of the Senate

See above.

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 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
(hi) to pass the examination on the unit of study.

2. To qualify for the Graduate Diploma in Science (Environmental Science) candidates must obtain a minimum of 33 credit points from a list of core units of study as approved from time to time or a list of units of study approved by the Faculty subject to the availability of these units of study at the time of enrolment, and in addition satisfactorily complete an interdisciplinary research project worth 15 credit points.

Graduate Diploma in Science (Microscopy and Microanalysis) (GradDipSc(Micr&An))

Resolutions of the Senate

See above.

Resolutions of the Faculty

1. A unit of study shall consist of lectures together with such tutorial instruction, essays, exercises or practical work in the laboratory as may be prescribed. In these resolutions, to

'complete a unit of study' and derivative expressions shall mean

(i) to attend the lectures, laboratories, tutorials and meetings as recommended;

(ii) to complete satisfactorily any practical and theoretical assignments; and

(iii) to pass the examination on the unit of study.

All units of study will be offered in February and July semesters.

A candidate shall complete coursework to the value of 48 credit points comprising ten core units of study, worth 32 credit points, and optional units of study worth 16 credit points selected from the following table :

Core Units of Study	Credit points
MCAN 4001 Principles of Microscopy and Microanalysis	2
MCAN 4301 Instrumentation - Introduction to Light Microscopy	4
MCAN 4302 Instrumentation - Introduction to Transmission Electron Microscopy	4
MCAN 4007 Instrumentation - Monitoring & Maintenance of Electron Microscopes	2
MCAN 4303 Instrumentation - Introduction to Scanning Electron Microscopy	4
MCAN 4008 Introductory Specimen Preparation for Optical Microscopy	2
MCAN 4102 Specimen Preparation (Materials) - TEM & SEM	4
MCAN 4101 Specimen Preparation (Biological)-TEM & SEM	4
MCAN 4105 Optical X-Ray & Electron Spectroscopy	4
MCAN 4304 Instrumentation - Introduction to Confocal Microscopy	4
MCAN 4108 Independent Project and Report	4

Optional Units of Study	Credit points
MCAN 4305 Instrumentation-Advanced Transmission Electron Microscopy	2
MCAN 4306 Instrumentation-Advanced Scanning Electron Microscopy	2
MCAN 4307 Instrumentation-Advanced Confocal Microscopy	4
MCAN 4109 Introduction to Diffraction	2
MCAN 4201 Advanced Diffraction Techniques	2
MCAN 4103 Surface Microscopy	2
MCAN 4104 Signal/Image Processing	4
MCAN 4202 Microanalysis for Materials - Electron	4
MCAN 4203 Microanalysis for Materials - Non-electron	4
MCAN 4204 Microanalysis in Life Sciences	2
MCAN 4205 Advanced Techniques in Biological Electron Microscopy	4
MCAN 4308 Image Analysis	4
MCAN 4209 Stereology	2
MCAN 4207 Image Capture/Recording	2

4. Satisfactory progress shall be as determined by the Faculty.

Graduate Diploma in Science (Psychology) (GradDipSc(Psych))

Resolutions of the Senate

See above.

Resolutions of the Faculty

Graduate Diploma in Science (Psychology)

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 comprising five core units and three elective units. The structure of the program is:

Full-time students, 24 credit points per semester

Semester 1

Unit of Study (core)	Credit points
Research Project (A)	9
Research Methods	5
Special Fields Topic	5

Unit of Study (1 elective)

Counselling Psychology (1)	5
Psychology of Addiction	5

Semester 2

Unit of Study (core)

Research Project (B)

Ethics/Current Issues

Unit of Study (2 electives)

Abnormal Psychology

Counselling Psychology (II)

Health Psychology

Part-time students, Year 1; 23 credit points

Semester 1

Unit of Study (core)

Research Project (A)	9
Research Methods	5

Semester 2

Unit of Study (core)

Research Project (B)	9

Part-time students, Year 2; 25 credit points

Semester 1

Unit of Study (core)

Special Fields Topic	5

Unit of Study (1 elective)

From table above	5

Semester 2

Unit of Study (core)

Ethics/Current Issues	5

Unit of Study (1 elective)

From table above	5
Plus one further elective in February or July semester from table above	5

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 certificates

Graduate Certificate in Information Technology (GradCertInfTech)

The Graduate Certificate in Information Technology is a coursework program involving postgraduate study of Computer Science and/or Information Systems. To be admitted, candidates need considerable prior academic study of Computing (to the level of an undergraduate minor), or extensive experience in technical roles in the IT industry. To complete the certificate, each student must complete 24 credit points from units of study listed in Table 1 to 4 of the resolutions of the MInfTech degree. Some of the units are foundational, general surveys of the main concepts in one important sub-field (such as Databases or Networks); other units offer detailed coverage of one Advanced Topic within a subfield.

Students who complete the GradCertInfTech with results at Credit level, including a Credit or better in one "Advanced Topic" unit, may be admitted to the Graduate Diploma in Information Technology.

Resolutions of the Senate

Eligibility for admission

1. An applicant for admission to candidature for the award shall, except as provided in chapter 10 of the by-laws,
   (1) have completed a three-year degree, with a substantial study of Computer Science; or
   (2) offer evidence of recognised prior learning which is considered to demonstrate the knowledge and aptitude required to undertake the units of study.

Availability

2. (1) Admission to the Graduate Certificate in Information Technology may be limited by a quota.
   (2) In determining the quota the University will take into account:
      (a) availability of resources including space, laboratory and computing facilities; and
      (b) availability of adequate and appropriate supervision.
   (3) In considering an application for admission to candidature, the head of the Basser Department of Computer science and the Faculty shall select in preference applicants who are most meritorious in terms of section 1 above.

Time limits

3. A candidate may proceed on either a full-time or a part-time basis.
   (1) A full-time candidate shall complete the requirements for the award not earlier than the end of the first semester of candidature, and not later than the end of the second semester of candidature, unless otherwise determined by the Faculty.
   (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 Faculty.

Resolutions of the Faculty

Method of Progression

1. (1) A candidate for the award 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 or practical work as may be prescribed.
   (3) In these resolutions, the expression "to complete a unit of study" means
      (a) to attend the lectures, and the meetings, if any, for seminars or tutorial instruction;
      (b) to complete satisfactorily the essays, exercises and practical work if any; and
      (c) to pass the examinations of the unit of study.

Availability of units of study

2. Availability of units of study in semesters may vary as determined from time to time by the Faculty.

Requirements for award of the certificate

3. Candidates for the award are required to complete satisfactorily units of study worth at least 24 credit points according to the syllabus approved by the Faculty.

Examination

4. On completion of the requirements for the award, the Faculty shall determine the results of the candidature, on the recommendation of the Head of the Basser Department of Computer Science.

Progress

5. 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 degree; and
   (2) where the candidate does not show good cause, terminate the candidature.

Graduate Certificate in Science (Microscopy and Microanalysis) (GradCertSc(Micr&An))

Resolutions of the Senate

Eligibility for admission

1. (1) The Faculty of Science, on the recommendation of the appropriate Committee, may admit to candidature for the Graduate Certificate in Science (Microscopy and Microanalysis) an applicant who is the holder of the degree of Bachelor of Science or Bachelor of Engineering, or any other award of the University of Sydney.
   (2) The Academic Board, on the recommendation of the Faculty, may admit to candidature for the graduate certificate 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 certificate 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 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 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

4. The requirements for the Graduate Certificate shall be as prescribed by Resolution of the Faculty.

Resolutions of the Faculty

1. A unit of study shall consist of lectures together with such tutorial instruction, essays, exercises or practical work in the laboratory as may be prescribed. In these resolutions, to 'complete a unit of study' and derivative expressions shall mean—
      (i) to attend the lectures, laboratories, tutorials and meetings as recommended;
      (ii) to complete satisfactorily any practical and theoretical assignments; and
      (iii) to pass the examination on the unit of study.

2. A candidate shall complete coursework to the value of 24 credit points from core units of study, selected from the following table:

Unit of Study		Credit points
MCAN4001	Principles of Microscopy & Microanalysis	2
MCAN4301	Instrumentation - Introduction to Light Microscopy	4
MCAN4302	Instrumentation - Introduction to Transmission EM	4
MCAN4007	Instrumentation - Monitoring & Maintenance EM	2
MCAN4303	Instrumentation - Introduction to Scanning EM	4
MCAN4008	Introductory Specimen Preparation for Optical Microscopy	2
MCAN4101	Biological Specimen Preparation-TEM & SEM	4
MCAN4102	Materials Specimen Preparation - TEM & SEM	4
MCAN4105	Optical X-ray & Electron Spectroscopy	4
MCAN4304	Instrumentation - Introduction to Confocal Microscopy	4
MCAN4108	Independent Project & Report	4

Presentation of theses

The following information is presented for the guidance of candidates. It should be regarded as a summary only. Candidates should consult the University's *Calendar* and the *Postgraduate Studies Handbook* and the Faculty of Science for the most current and detailed advice. The *Postgraduate Studies Handbook* is available on tie University's home page, http://www.usyd.edu.au/su/plarining/pghand/pgcon.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, tie year of submission and tie name of the University of Sydney should appear in lettering on the front cover or on tie 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 tie University of Sydney may be omitted and the thesis title abbreviated. Supporting material should be bound in the back of the tiesis 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, tie Science Faculty has resolved that a tiesis 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 re-keying 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 Usted above. There are no requirements for single/double spacing or single/doubled sided presentation, nor point size, Figure presentation, format of bibliographic citations, etc. Candidates should however, be aware that, if the degree is awarded, the thesis becomes a public document, the quality of which reflects on the ability of the candidate. Moreover, utilising a format that will make the examiners' tasks easier is obviously sensible.

Scholarships and prizes: postgraduate

This handbook contains simplified details of some of the prizes and scholarships offered by the University. For full details you are advised to consult the Scholarships Office.

Postgraduate scholarships tenabie at the University of Sydney

Prospective postgraduate students should consult the Scholarships Office in August/September each year about Australian Postgraduate Awards and University of Sydney Postgraduate Awards (closing: 31 October) and Australian Postgraduate Course Awards (closing: 31 October).

Grants-in-aid

These are offered by application (closing: April each year) to postgraduate students seeking assistance with travel or maintenance.

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 successful.

Applications for the major travelling scholarships offered by external bodies generally close in August or September. All postgraduate scholarships are advertised in tie *Bulletin Board,* which is available in departments or from the Scholarships Office in the Main Quad.

Additional scholarship information can be found in Chapter 6.

Scholarship	Value $	Closing date for applications	Qualifications
1 .Tenable at the University of Sydney			
Australian and University of Sydney Awards	16 135 (1999)	31 October	Graduates with Hons I. For research in any Postgraduate field.
Henry Bertie and Florence Mabel Gritton Postgraduate Research Scholarships	16 135	January	For research in chemistry in relation to industry and agriculture
George Harris Scholarships (2)	1200 each		One for a research student in chemistry and one for a research student in geology and geophysics
Richard Claude Mankin Scholarship - Postgraduate	Up to APA rate	as advertised	For research into water conservation
A.E. & F.A.Q. Stephens Scholarship	20 822	31 October	Graduates with research experience. For research in any field
2. Grants in Aid			
R. and M. Bentwich Scholarship	340	April	Graduate who holds a postgraduate research scholarship and who requires a supplementary grant.
Edgeworth David Travelling Scholarship		April	For postgraduate research in geology
Herbert Johnson Travel Grants	1000	April	Travel grant for graduates holding travelling scholarships

Postgraduate information

Scholarship	Value $	Closing date for applications	Qualifications
James King of Irrawang Travelling Scholarship	1000	April	Travel grants for graduates in any faculty
G.H.S. & I.R. LightoUer Scholarship	1000	April	Travel grants for graduates in Arts, Medicine, Science, Veterinary Science, Agriculture and Engineering

2.Travelling Scholarships

Awarded by the University of Sydney

Barker Graduate Scholarship	15 500	March	For postgraduate research in mathematics
Harriett Beard Scholarship	15 500	March	For postgraduate research in the physical sciences, engineering, veterinary science and dentistry
Charles Gilbert Heydon Travelling Fellowship	15 500	March	For postgraduate research in biological sciences
J.B. Watt Travelling Scholarship	15 500	March	Graduate with Hons I in any faculty
Eleanor Sophia Wood Travelling Scholarship	15 500	March	Graduate with Hons I in any faculty

Awarded by external bodies

Commonwealth Scholarship and Fellowship Plan Awards (UK)	living allowance & fees	September	For research in any field.
Gowrie Postgraduate Research Scholarship (2)	4000	31 October	Descendants of ex-servicemen. For research in any field.
Rhodes Scholarship	living allowance & fees	1 September	Age limit 25. For tenure at the University of Oxford.
James Vincent Scholarship in Microbiology			Conference travel grant or research support in Microbiology.

4. Other Postgraduate awards (Awarded by Departments)

Agnes Campbell Postgraduate Prizes	Up to 4000	For excellence in Organic Chemistry
Bercovici Medal	15 000 p.a.	PhD candidate (TBR) determined as having produced the best paper in the proceeding calendar year.
The David Coffey Geotechnical Research Scholarship	500	Postgraduate research scholarship in Geotechnics and Geomechanics.
John Courts Scholarship	1000 p.a.	Postgraduate research in Science.
Earth Resources Foundation Scholarship	10 500	Research in Geology or Geophysics.
George Harris Scholarships (2)	1200	One for a research student in Chemistry and one for a research student in Geology and Geophysics.
Jabez King Heydon Memorial Prize	700	PhD thesis in Biological Sciences.
C.G. and R.J.W. Le Fevre Postgraduate Student Lectures	80	Research in Chemistry.
H. Tasman Lovell Memorial Medallion	Medal	PhD thesis in Psychology.
A.H. Martin Scholarship	550	Merit in MPsych.
T.G. Room Medal	Medal	PhD thesis in Pure Mathematics.
Science Centenary Fund Scholarship	2500	Postgraduate research in science.
Martin and Elizabeth Jane Simmat Prize No. 2	250	Merit in MPsych.
The Margaret Stewart Fund Scholarship	15 364 p.a.	Postgraduate research in Psychology.
Postgraduate Excellence Prizes in Biological Science (2)	varies	For outstanding academic performance in second and third year of postgraduate candidature
Jo Rogers Memorial Prize	varies	Top student in final year Nutrition & Dietetics course.
James Vincent Scholarship in Microbiology		Conference travel grant or research support in Microbiology.
Yakult Award	300	Top student in Clinical Dietetics in last year of Nutrition & Dietetics course.

Both Undergraduates and Postgraduates

Henry Chamberlain Russell Prize	250-1400	Essay, thesis or research report on Astronomy.

CHAPTER 9
Staff

This information is correct as at 21 June 1999.

Faculty of Science

Dean
Professor Beryl Hesketh, BA Hons C'Town MA Well. PhD
Massey, FAPsS
Pro-Deans
Associate Professor Christopher B. Gillies, MAgrSc Qld PhD
Alta
Associate Professor Anthony F. Masters, BSc Melb. PhD
A.N.U., FRACI CChem
Associate Deans
Professor Leslie D. Field, PhD DSc, FRACI CChem.
Associate Professor Gerald M. Holder, PhD Lond. MSc, MPS
Associate Professor Brian W. James, BSc PhD
Dr Mary Peat, BSc Birm. PhD Brist.
Associate Professor Cedric D. Shorey, MSc PhD U.N.S.W,
CGIAFCGI
Dr Ian Spence, BSc PhD Monash
Associate Professor Donald E. Taylor, MSc Monash DPhil
Oxf.
Dr Michael A.W Thomas, DPhil Oxf. BSc
Dean's Office
Executive Officer
Kim P. Schwieters, BA Well. MA
Executive Assistant
Christine Askew
Administrative Assistant
Sutira Teh
Faculty Office
Faculty Manager
Barbara Chmielewski, BA (Comm) N.S.WI.T
Postgraduate Adviser
Renee Bartholomeusz
Undergraduate Adviser
Thea Papageorgiou
Faculty Administration Officer
Elisabeth van de Wetering, BA
Administrative Assistants
Martin Hesse, BA Macq.
Eva Papas, DipEd U.N.S.W. BA
MelSlee.BAUQ
Marketing
Marketing Manager
vacant

Professional Development Course Coordinator
Anne M. PoweU, BBusCom Q.U.T.
Administrative Assistants
Jasmine Chambers, GDipComm U.T.S. BSc
Jeremy Field
Resource Management
Finance Manager
Daniela Viola, RAG Scuola di Ragioneria (Milan)
Computer Systems Officer
John S Twyman

Agricultural Chemistry and Soil Science

Professor in Agricultural and Environmental Chemistry
(Personal Chair)
Ivan R. Kennedy, PhD DSc(Agric) W.Aust. FRACI CChem.
Appointed 1996

Professor in Soil Science
Alexander B. McBratney, BSc PhD Aberd. Appointed 1995
Associate Professors
Les Copeland, BSc PhD, MRACI CChem
Anthony J. Koppi, BSc PhD Aberd. (absent on secondment)
Senior Lecturers
Robert A. Caldwell, MSc PhD, MRACI CChem
Edith M. Lees, BSc PhD Lond.
Lecturer
Stephen R. Cattle, BScAdr PhD
Balwant Singh, MSc Haryana Agric Univ. HISAR India PhD
WAust.
Professional Officer
John T. Corbett
Research Associates
Sundaram Baskaran, MSc Tamilnadu PhD Massey
John Triantifilis, BScAgr PhD
Francisco Sanchez-Bayo, MSc PhD Madrid (Auton)
Senior Research Associate
Inakwu O.A. Odeh, BSc Ibadan PhD Adel.
Senior Technical Officers
Colin Bailey, BApplSc N.S.WI.T.
Chris Conoley, BSc Macq.
Kevin McLauchlan, BiolTechHCert S.T.C.
Technical Officer
Iona Gyorgy, BiolTechCert BSc(Biotech) U.T.S.
Administrative Assistant
Pamela Clifford
Honorary Appointments
Emeritus Professor
Neville Collis-George, MSc Mane. PhD Camb., HonDScAgr
FRSChem
Honorary Associates
Harold R. Geering, MSc Cornell
Rodney J. Roughley, PhD Lond. MScAgr
Norman K. Matheson, PhD Edin. MSc

Anatomy and Histology

Challis Professor of Anatomy
Jonathan Stone, BSc(Med) PhD DSc, FAA. Appointed 1987
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
Reader
Johnston W. McAvoy, BSc Belf. PhD Flin.
Associate Professors
Cristobal G. dos Remedios, PhD DSc
Christopher R. Murphy, BSc Adel. PhD Flin. DSc
Jan M. Provis, BSc PhD U.N.S.W.
Cedric D. Shorey (Head of Department), MSc PhD U.N.S.W,
CGIA FCGI
William S. Webster, BSc PhD Lond.
Senior Lecturers
Vladimir J. Balcar, BSc Sheff. PhD A.N.U.
Maria Byrne, BSc Galway PhD Vic.B.C.
Tailoi Chan-Ling, MOpton PhD U.N.S.W., FAAO
John Mitrofanis, BSc U.N.S.W. PhD
Lynette A. Moffat, BSc PhD
Margaret A. Swan, BSc PhD
Lecturers
Robin Arnold, MSc
Deborah Bryce, BSc N'cle(N.S.W) MChiroprac Macq.
Denise A. Donlon, BA PhD N.E. BSc DipEd
Senior Research Fellows
Julian A. Barden, PhD Macq.
Coral G. Chamberlain, MSc PhD
Tailoi Chan-Ling, MOpton PhD U.N.S.W, FAAO
Research Fellows
Robbert de Iongh, MSc PhD

Angela Hales, BSc PhD
Frank Lovicu, BSc PhD
Michael Slater, BSc Macq. PhD
Associate Lecturers
Fiona Stewart, BSc N.E. MB BS
Richard Ward, BMedSci MB BS Monash
Professional Officers
Peter R. Mills, DipMT A.I.M.L.S., AAIMLS
Timothy Shaw, BSc PhD
Vera Terry, BSc PhD
Senior Technical Officers
Darryl R. Cameron
Clive H. Jeffrey
Roland A. Smith
Technical Officers
Peiren Kent
Henry Marell
Michael White
Administrative Officers
Lena Ting, DipPublAdmin H.K.
Debbi Douglass
Administrative Assistants
Mai Pham, BSc U.T.S.
Honorary Appointments
Honorary Associates
Arthur V. Everitt, BSc PhD
Anne Macintosh
Robert R. Munro, MD BS, FRACS
John K. Pollak, BSc PhD
Richard Wright, BA Camb. MA
Research Associates
Peter O. Bishop, MB BS DSc MD, FRS FAA
William Burke, BSc PhD Lond
Estelle Lazer, BA PhD

Biochemistry

McCaughey Professor
(Vacant)
Professors
Richard I Christopherson, BSc PhD Melb. (Personal Chair).
    Appointed 1998
Philip William Kuchel, BMedSc MB BS Adel. PhD A.N.U.
    Appointed 1980
Robert Gerard Wake, MSc PhD, FAA (part-time).
    Appointed 1977
Associate Professors
Alan R. Jones, PhD Mane. MSc
Glenn F. King, BSc PhD
Emma Whitelaw, BSc A.N.U. DPhil Oxf.
Senior Lecturers
Charles A Colfyer, BSc Flin. PhD
Arthur D Conigrave, BSc(Med) MB BS MSc PhD, FRACP
Merlin Crossley, BSc Melb. DPhil Oxf.
Gareth S Denyer, BA DPhil Oxf.
Simon B Easterbrook-Smith, BSc Well. PhD Adel.
Michael A.W. Thomas, DPhil Oxf. BSc
Anthony S Weiss, BSc PhD
Associate Lecturers
Douglas J Chappell, BA BSc PhD DipEd
Jill Johnston, BSc Qld DipEd Catholic C.E.(Syd.)
Joan P Loke, GradDipEdStudies Kuring-gai C.A.E. MSc
Dale P Hancock, BSc PhD (part-time)
Senior Research Fellow
J. Mitchell Guss, BSc PhD
Research Fellow
William A. Bubb, DIC Lond. BSc PhD
Computer Systems Manager
Sen Ho Tarn
Administrative Officer
Michael C. Miller, BiolTechCert S.T.C. BAppSc N.S.W.I.T.
    DipBusStud N.E.

Senior Technical Officers
Robert T. Czolij, BSc Macq. BiolTechCert S.T.C.
Joseph Dimauro, MSc
William G. Lowe, BiolTechCert S.T.C.
Peter L. McGuire, ElecEngCert S.T.C. ElectronicsEngCert
    G.T.C.
Ross I. Taylor, FittMachCert ToolmakingCert S.T.C.
Technical Officers
Cesar De La Paz
Juliana Ferenczi
Debra Phillips, QTACert N.Z.I.M.L.T.
Laboratory Assistant
vacant
Librarian
Sarah L. Barrett, DipJJVl(Lib) U.N.S.W. BA
Administrative Assistants
Stephen Conaghan
Bronwyn Ferguson (part-time)
Jeanine Ward
Honorary Appointments
Emeritus Professors
Clifford H. GaUagher, PhD Lond. DVSc, FACVSc FRCPath
Noel S. Hush, DSc Mane. MSc, FRS FAA FRACI
Honorary Associates
Michael A. Messer, MSc PhD Melb.
Vivian K. L. WMttaker, MB BS Qld PhD A.N.U.
Michael Slaytor, MSc PhD
Honorary Research Associate
Stephen D. Lyons, BSc Melb. PhD

Human Nutrition Unit

Boden Professor of Human Nutrition
Ian Douglas Caterson, BSc MB BS PhD, FRACP
Appointment from 1 January 1997
Associate Professor
Janette C. Brand Miller, BSc PhD U.N.S.W, FAIFST
Senior Lecturers
Margaret A. Allman-Farinelli, BSc PhD DipNutrDiet
Samir Samman, BSc PhD
Kellogg Lecturer in the Human Nutrition Unit
Philippa Lyons Wall, BSc DipNutrDiet PhD
Lecturer
Sue Amanatidis, BSc DipNutrDiet (half-time)
Associate Lecturer
Margaret Nicholson, BSc DipNutrDiet MEd DipEd
Professional Officer
Ziaul I. Ahmad, BAppSc(Biomed) MAppSc U.T.S.
Administrative Assistants
Isa Hopwood
Honorary Appointments
Honorary Clinical Supervisors
Karen Allsopp, BSc Aberdeen MnutrDiet
Kylie Bennetts, BSc DipNutrDiet
Lyn Brown, DipIM CertDiet Melb
Jo Burton, BSc DipNutrDiet
Kathy Chapman, BSc MNutrDiet
Suzie Ferrie, BSc DipFdTech UNSW MNutrDiet
Anne Gordon, BSc GradDipDiet GradDipHEd + Prom
Peter Guest, DipEd UWS DipSportsSc MBA Macq BSc
    DipNutrDiet
Jane Harris, BSc MNutDiet
Margaret Holyday, BSc DipNutrDiet
Michelle Hughes, BSc DipNutrDiet
Keryn Kahl, BSc Adel DipHNutDiet Flinders
Debbie Lillienthal, BSc Hec Canada GradDipEdStud
Maria Loveday, BSc Deakin CertDiet Vic
Felicity McLean, BSc UNE GradDipNurrDiet QIT
Marcelle Middleton, BSc ANU/UC DipNutrDiet
Lesley Miller, BSc DipNutrDiet
Dianne Muniz, BSc NSW DipNutrDiet Adel
Margaret Nicholson, BSc DipNutrDiet MEd DipEd
Rita Nicolaou, BSc DipNutrDiet

Nola Patterson, BSc Qld DipNutrDiet
Yvette Payne, BSc Ncle MNutrDiet
Joanne Prendergast, BScAcadia Pdt Montreal MHPEd UNSW
Elizabeth Robinson, BappSc UWS MnutrDiet W'gong
Beth Rohrlach, BSc DipNutrDiet
Lisa Staker, BSc MNutrDiet
Jane Storman, BSc DipNutrDiet
Dawn Vanderkroft, BSc UBC CertDiet
Deanne Waldron, BSc UNE MnutrDiet
Kathy Walsh, BSc DipNutrDiet
Amanda Whitworth, BSc DipNutrDiet
Sue Wright, BSc DipNutrDiet
Sharon Youde, BSc MnutrDiet
Honorary Community Supervisors
Sue Amanatidis, BSc DipNutrDiet
Susan Dumbrell, BSc MnutrDiet
Jenny Hazelton, BSc ANU DipNutrDiet
Marie Martin-Smith, BSc MnutrDiet Wgong
Honorary Food Service Supervisors
Susan Bourke, BSc DipFoodTech UNSW DipNutrDiet
Peter Guest, DipEd UWS DipSportsSc MBA Macq BSc
    DipNutrDiet
Maria Kokkinakos, BSc DipNutrDiet
Fifi Spechler, BSc DipNutrDiet
Honorary Industry Supervisors
Rebecca Bousted, BSc MNutrDiet W'gong
Tiffany Davidson, BSc Deakin GradDipDiet Deakin
Toni Irwin, BSc DipNutrDiet MPH
Liz Rae, BSc MNutrDiet
Peter Williams, BSc DipNutrDiet PhD

Biological Sciences
Challis Professor of Biology
Ian Douglas Hume, BSc(Agric) PhD W.Aust. DSc N.E.,
    FATBiol. Appointed 1987
Professor of Biology
David Joseph Patterson, PhD Brist. DSc Qu. Appointed 1992
Professor of Biology (Genetics)
Ronald Anthony Skurray, AUAPharm PhD DSc Adel, MASM
    FATBiol. Appointed 1991
Professor in Experimental Ecology (Personal Chair)
Antony J. Underwood, PhD DSc Brist., FAA FLS FTBiol
    FATBiol CBiol. Appointed 1992
Professor in Evolutionary Biology (Personal Chair)
Richard Shine, BSc A.N.U. PhD N.E. DSc. Appointed 1993
Professor in Plant Sciences (Personal Chair)
Anthony WD. Larkum, BSc Lond. DPhil Oxf., ARCS
Readers
Christopher Dickman, BSc Leeds PhD A.N.U.
Alan W Meats, BSc Durh. PhD N'cle(U.K.), FRES
    (McCaughey Lecturer in Entomology)
Associate Professors
William G. Allaway, MA Camb. PhD Lane.
Patricia J. Armati, MSc PhD, MATBiol
Christopher B. Gillies, MAgrSc Qld PhD Alta
Rosalind T. Hinde, BSc PhD
Ove Hoegh-Guldberg, PhD Calif. BSc
Robyn L. Overall, BSc U.N.S.W. PhD A.N.U.
Director of First Year Biology
Mary Peat, BSc Birm. PhD Brist.
Senior Lecturers
Michael J. Kingsford, BSc Cant. MSc PhD Auck.
Peter McGee, BAgrSc PhD Adel. DipHEd U.N.S.W.
Benjamin Oldroyd, BScAgr PhD
Michael B. Thompson, BSc PhD Adel.
Lecturers
Susan Franklin, BSc Aberystwyth MSc S'ton PhD
Murray J. Henwood, BSc Well. PhD A.N.U.
Dieter Hochuli, BSc Monash PhD La Trobe
Bruce Lyon, BSc PhD Monash
Jan Marc, BSc PhD U.N.S.W.
Kathryn Raphael, BA PhD Macq

Glenda Wardle, MSc Auck. MS PhD Chic.
Associate Lecturers
Graham Harvey, BSc Griffith, MSc Qld, PhD U.N.S.W.
Simon Hudson, BSc PhD La Trobe
Alison Lewis, BSc, DipEd
Osu Lilje, BSc
Elizabeth May, BSc, DipEd, PhD U.N.S.W.
Rosanne Quinnell, BSc PhD A.N.U.
Jennifer Saleeba, BSc PhD Melb.
Charlotte Taylor, BSc Dund. PhD Aberd.
Murray Thomson, Bsc Macq, MSc U.N.S.W, PhD N'Castle
Associate Lecturer (part-time)
Laura Danckwerts, PhD NSW BSc
Fellowship Holders
QEII Fellow (ARC)
Gregory Rouse, MSc Qld PhD
ARC Postdoctoral Research Fellows
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Bronwyn Gillanders, BSc Canterbury N.Z. MSc Otago PhD
Ross Jones, BSc S'ton. PhD James Cook
NH&MRC Fellows
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U2000 University of Sydney Postdoctoral Fellow
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    (EICC)
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Neville B.C. Firth, BSc PhD Monash
John Harper, BSc PhD QU
Jennifer Hart, BSc PhD
Roger Lentle, BSc MBBS Lond, MSc Massey
Karin Lyon, MSc PhD Aarhus
Thomas Madsen, PhD Lund
Ian Montgomery, BA Dublin PhD (Inst, of Marine Ecol.)
Donelle Trautman, BSc PhD Murdoch
Nimalika Weerakoon, BSc Beloit PhD A.N.U.
Jing Ting Zhao, MedSc Shanghai PhD
Professional Officers Grade III
Janice L. Jacobs, BSc(GenSc)
Michael Joseph, BSc
Administrative Officer
Maureen Claxton, BA R'dg DipEd N.E.
Administrative Officer (part-time)
Naomi Jacobs, BBus U.T.S.
Finance Officer

Louie Briskoski, AssDip (Accounting) Granville T.A.F.E.
Computer Systems Officer
Sandra Lloyd, Adv Cert Urb Hort. Ryde School of Hort.
Senior Technical Officers
George Barrett, HNC(ApplBiol) U.K.
Virginia Klomp, BiolTechCert BiolTechHigherCert S.T.C.
Robert Mackay-Wood, BSc Cant.
Andrew Oulianoff
Basil Panayotakos
Malcolm Ricketts, BSc Macq. PhotogCert S.T.C.
Salvatore Ruggeri
Heather Sowden, BiolTechCert S.T.C.
Klaus-Peter Suckau, Dipllng Tech.Univ. Munich
Multimedia Courseware Developer
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    BSc U.T.S.
Margaret Gilchrist, BiolCert S.T.C.
Joanna Hines, BSc GradDipSci (Env Sci)
Hamish MacKenzie, BiolCert S.T.C.
Ralph Maddox, BiolTechCert Arm.T.C.
Claudio Muhlrad, BiolTechCert S.T.C.
Christine Newman, BAppSc U.T.S.
Helen Kranidiotis, BSc

Staff

Technical Officer (half-time)
Mark Dickson, BSc
Curator of Zoological Collections
Angela Low, BSc (part-time)
Laboratory Assistants
Hamlet Giragossyan (half-time)
Mihaly Ferenczi, BAgrSc Godallo
Attendants
Hamlet Giragossyan (half-time)
Julio Pena
Administrative Assistants
Semra Emul
Roslyn Malin (part-time)
Claudia Morales
Sylvia Warren
Pamela Wray, BA N.E.
Honorary Appointments
Emeritus Professors
Donald Thomas Anderson, AO, PhD Lond. DSc Lond, and
 Syd., FRS FLS FAIBiol
Charles Birch, BAgrSc Melb. DSc Adel. FAA FAAAS
Michael G. Pitman, OBE, MA PhD ScD Camb. FAA
John Alexander Thomson, MSc MAgrSc PhD Melb.
Honorary Research Associates
Heather Adamson, PhD Macq. BSc
Ross A. Bradstock, BSc PhD
Judith Caton, BSc Adel. MA A.N.U. DipEd CCAE PhD
 A.N.U.
Alan Clift, BScAgr PhD
Donald Colgan, BSc A.N.U. PhD Melb.
Stephen Cork, BSc PhD U.N.S.W.
Eric Dorfman, BA Calif MSc San Jose State PhD
Graham J. Faichney, BSc(AgrSc) MScAgr PhD DAgrSc Melb.
Timothy Flannery, BA LaT. MSc Monash PhD U.N.S.W.
Marianne Frommer, BSc PhD
Adrienne Grant, BSc PhD A.N.U.
Leslie Hall, BAppSc Canb. PhD Qld
George Humphrey, LLB U.N.S.W. BA PhD
Francis L. Lemckert, MSc
Garry Lynch, BSc Flinders, PhD Monash
Valerie B. Morris, BSc PhD Edin.
Peter Myerscough, MA PhD Oxon
Mats Olsson, BSc PhD Goteborg
John Parmer, MSc PhD Sheffield
Kerryn Parry-Jones, DipEd STC MAppSc PhD NSW BSc
John D. Pollard, BSc MB BS PhD
Deirdre Sharkey, BSc
John A Sved, BSc PhD Adel.
Athol Turner, BAppSc U.T.S. DipEd STC
Honorary Teaching Associates
Daniel Bickel, BSc Michigan PhD
Walter E. Boles, BSc Emporia State
Allen E. Greer, BA Stan. PhD Harv.
Patricia A. Hutchings, BSc Lond. PhD DSc N'cle(U.K.)
Jeffrey M. Leis, BSc Arizona PhD Hawaii
John R Paxton, BA MSc PhD S .Calif.
Winston Ponder, MSc PhD DSc Auck.
William Rudman, BSc PhD DSc Auck.
George Wilson, BA Indiana MSc U.C.S.D. PhD La Jolla
Visiting Scholars

Lorenzo Alibardi, BSc PhD Bologna
Andrew Barron, BSc PhD Camb.
Frank Gleason, BSc Trinity College, Hartford PhD U.C.L.A.
Genquing Liang, BSc Hebei Ag Uni MSc Beijing Ag Uni
Ellen Popodi, MSc Wise PhD Marquette
Rudolf Raff, BSc Perm PhD Duke
Sharon Minsuk, BS Stanford PhD U.C.L.A. Berkeley
Louise Osborne
Elizabeth Raff, BS Perm. State PhD Duke
Cynthia Santos, BSc Fed.Uni.Sergipe(Brazil) MSc
 Fed.Uni.Parana(Brazil)
Shameem Sharieff, BSc MSc Mphil Mysore
Roswitha Stenke, Dip PhD Munich

James Stewart, PhD Tulsa
Jeffery Villinski, BA Minnesota MS Houston
Wandee Wattanachaiiyingcharoen, BScAgr Khon Khaen MSc
 AgrU.WA

Pathology (Cell Pathology)

Professor
Nicholas H. Hunt, BSc PhD Aston. Appointed 1989
Reader
John R. Gibbins, MDS PhD
Associate Professors
John Hilton, RFD MBChB St Andrews FRCPA
Nicholas J.C. King, MB ChB Cape T. PhD A.N.U.
SdtiOT J-iBCtUTQVS
Kerry Crotty, BSc(Med) MBBS U.N.S.W. FRCPA MIAC
Brett D. Hambly, BSc(Med) MB BS PhD
Roger S. Pamphlett, BSc(Med) MD ChB Cape T. FRACP
 MRCPath

Chemistry

Professor of Chemistry (Inorganic Chemistry)
Len Lindoy, PhD DSc U.N.S.W, FAA FRACI CChem FRSC.
 Appointed 1996
Professor of Chemistry (Physical Chemistiy)
Donald Harold Napper, PhD Camb. MSc, FAA FRACI
 CChem. Appointed 1985
Professor in Chemistry (Organic Chemistry)(Personal Chair)
Leslie D. Field, PhD DSc, FRACI CChem. Appointed 1994
Professor in Chemistry (Polymer Chemistry)(Personal Chair)
Robert G. Gilbert, PhD A.N.U. BSc, FAA FRACI CChem.
 Appointed 1992
Professor in Chemistry (Inorganic Chemistry)(Personal Chair)
Peter A. Lay, BSc Melb. PhD A.N.U., FRACI CChem.
 Appointed 1997
Professor of Chemistry (Organic Chemistry)
Maxwell J. Crossley, BSc PhD Melb., MRACI CChem.
 Appointed 1999
Associate Professors
Robert S. Armstrong, MSc PhD, MRACI CChem
James K. Beattie, BA Prin. MA Camb. PhD Northwestern,
 FAAAS FRACI FRSC CChem
Trevor W Hambley, BSc W.Aust. PhD Adel., FRACI CChem
Margaret M. Harding, BSc PhD, FRACI CChem
John C. Mackie, PhD DSc, FRACI CChem
Anthony F. Masters, BSc Melb. PhD A.N.U., FRACI CChem
Damon D. Ridley, BSc PhD, FRACI CChem
Gregory G. Warr, BSc PhD Melb., FRACI CChem
Director of First Year Studies
Julia M. James, BSc PhD Lond., MRACI CChem
Senior Lecturers
George Bacskay, BSc Melb. PhD Camb.
James M. Eckert, BA MSc PhD, MRACI CChem
Adrian George, BSc PhD R*dg, MRSC MRACI CChem
Peter R. Harrowell, BSc PhD Chic.
Scott H. Kable, BSc PhD Griffith DipBusAdmin Q.I.T.
Brendan J. Kennedy, BEd Melb.S.C. PhD Monash
Anthony R. Lacey, MSc PhD, MRACI CChem
Donald V. Radford, MSc PhD DipEd N.E.
Lecturers
Robert W Baker, BSc PhD W.Aust.
Ronald J. Clarke, BSc PhD Adel.
Ronald R. Fenton, BSc PhD Macq. MRACI CChem
Craig A. Hutton, BSc PhD Adel.
Malcolm D. McLeod, BSc Monash PhD Camb.
Cameron J. Kepert, BSc U.W.A. PhD Lond.
Michael S. Sherburn, BSc PhD Nott.
U2000 Postdoctoral Fellow
Michael G. Gardiner, BSc PhD Griff.
NHMRC Howard Florey Fellow
Matthew A. Cooper, BSc PhD Adel.
ARC Senior Research Fellows
Jeffery R. Reimers, BSc PhD A.N.U., MRACI CChem

Simone C. Vonwiller, BSc PhD, MRACI CChem
ARC *Research Fellows*
Meredith J. T. Jordon, BSc PhD
Research Fellows
Christopher Fellows, BSc PhD James Cook
Principal Research Fellow
Brian Hawkett, BSc PhD DipEd
Research Associates
Zhengli Cai, MSc PhD Chinese Acad.Sci.
Murray Davies, BSc PhD
Carolyn Dillon, BSc PhD
Herbert Fynewever, PhD Wisconsin
Aviva Levina, MSc Riga PhD Riga
Postdoctoral Fellows
Hank de Bruyn, BSc PhD
Gerald G. Pereira, BSc PhD Melb.
Lars Vorwerg, PhD Potsdam
Ondreg Votava, Mgr Charles Uni (Prague) PhD Colorado
Gang Wei, MSc Hangzhou Uni PhD N'castle
Industry Liaison Officer
Maurice J. Barton, BSc Brighton Coll.Tech. MSc Oxf. PhD
  Aston.
Professional Officers
Bradley Collins, BSc PhD Qld (Optical Spectroscopy)
Tuan La, BE U.N.S.W. (Electronics)
Ian Luck, BSc (NMR and EPR)
Kelvin Picker, BSc PhD, MRACI (GLC and HPLC)
Jaroslaw T. Popiolkiewicz (Electronics)
Xiaomin Song, PhD Hl. (Mass Spectrometry)
Peter Turner, BSc Flind. MSc PhD U.N.E.
Z. John Trafalski (Electronics)
Chuan-Liang Xie, PhD 1ll. (NMR and EPR)
Professional Assistant
S. Warren Lazer, BSc PhD
Laboratory Manager
John Duckworth
Assistants to the Head of the School
Pat Matterson
Catherine H. Woods, BA
Administrative Assistants
Vimila Ananda-Rajah
Carolyn Budweg
Lynne Harvey
Sophie Patsalides
Janet Sassanfar
Lisa Wu
Honorary Appointments
Emeritus Professors
Hans C. Freeman, MSc PhD, FAA FRACI FRSC CChem
Noel S. Hush, DSc Mane. MSc, FAA FRACI
Sever SternheU, PhD DSc DIC Lond. MSc, FAA FRACI
  CChem
Walter C. Taylor, PhD DSc Manch. 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
Manuel Aroney, AM OBE, PhD DSc, FRACI FRSC CChem,
  CorrMembAcadAthens
Robert J. Hunter, BSc PhD, FAA FRACI CChem
Honorary Associate
Peter Hidi, MSc Bud., FRACI CChem
Honorary lecturer
Alan J. Williams, MSc PhD, MRACI CChem

Basser Department of Computer Science
Professors
Jon D Patrick, Dipl.Surv. R.M.I.T. BSc Deakin MSc Dublin,
  PhD Monash DipBehHealthPsych La Trobe.
  Appointed 1998

Associate Professors
Allan G. Bromley, BSc PhD
Robert J. Kummerfeld, BSc PhD
Reader
David Feng, MS Shanhai Jiao Tong MS PhD Calif.
Senior Lecturers
Alan Fekete, PhD Harv. BSc
Doan B. Hoang, BE W.Aust. ME PhD N'cle (N.S.W.)
Judy Kay, MSc PhD
Jeff Kingston, BSc PhD
Ian A. Parkin, BSc PhD Adel.
Antonios Symvonis, DipCompEng&InfoSc Patras MS PhD
  Texas
Michael Wise, BA BE PhD U.N.S.W.
Lecturers
Michael Hitchens, BMath PhD N'cle(N.S.W)
Raymond Wong, BSc ANU PhD HKUST
Associate Lecturers
Nikki Lesley, BSc ANU MSc Colorado
Computer Systems Supervisor
Raymond Loyzaga, BSc U.N.S.W.
Computer Systems Officers
John Bignuocolo, MSc
Piers R. Dick-Lauder, BSc DipCompSc Brad.
Michael Flanagan, PhD
Roy Giles, BSc Wales
Bruce Janson, BSc
Greg Ryan, BSc
Senior Technical Officers
Allan Creighton
Remo Di Giovanni
Arthur Scott
Technical Officer
Witold Janus
Administrative Officer
Helene Orr
Administrative Assistants
Sabine Kraus
Juhyun Pak
Josephine Spongberg
Honorary Appointments
Emeritus Professor
John Makepeace Bennett, AO, BE(Civ) BE(Mech&Elec) BSc
  Qld PhD Camb., FTS FACS FBCS FlEAust FIMA
Honorary Research Associates
Rex Di Bona, BE(Hons) PhD Syd
Stefan Eberl, MSc UNSW
Norman Foo, ME Cant. MA PhD Mich.
Michael Fulham, MB BS (UNSW)
Roger Fulton, MSc UTS
Frans Henskens, BMath PhD DipEd DipCompSc N'cle
  (N.S.W.)
Brian Hulton, BSc(Hons) MSc(Med Phys) Aberd
Jesse Jin, PhD Otago
Steve Meikle, PhD UNSW
Agathe Merceron PhD Paris
Cecile Paris, PhD Columbia
Jack R. Phillips, BMechE PhD Melb.
John Rosenberg, BSc(Hons) PhD Monash
Eric Tsui, PhD Deakin

Geosciences

McCaughey Professor
Eric Waddell, BA Oxf. MA McGill PhD A.N.U.
*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 T. PhD Edin. Appointed 1995
Associate Professors
John Connell, BA PhD Lond.
Deirdre Dragovich, MA Adel. PhD

Staff

Jock B. Keene, BAgEc ME PhD Calif. BSc
Andrew D. Short, MA Hawaii PhD Louisiana State BA
Senior Lecturers
Gavin F. Birch, MSc PhD GradDipIndAdmin Cape T.
David E.M. Chapman, MEngSc U.N.S.W. BA PhD
Geoffrey L. Clarke, BSc PhD Melb.
Peter J. Cowell, BA PhD
Philip Hirsch, BA Oxf. MPhil Dundee PhD Lond.
Lecturers
Roger Buick, BSc PhD W.Aust.
Stephen J Gale, MA Oxf. PhD Keele
Thomas C.T. Hubble, MAppSc U.N.S.W. MSc DipEd
Michael Glen Hughes, BSc PhD
Philip McManus, BA GradDip MES PhD
Dietmar Muller, BSc Kiel PhD Calif.
William Pritchard, BA PhD
Associate Lecturers
Gavin Doyle BSc PhD N'cle(N.S.W.)
Colin Wilkins, BSc Hull PhD James Cook
Research Fellow
Jonathan Hargreaves, BSc York SPhil Oxon.
Chief Cartographer
John E. Roberts
Cartographer
Peter Johnson
Honorary Appointments
Emeritus Professors
Maurice T. Daly, BA PhD
Trevor Langford-Smith, BA Melb. MSc Adel. PhD A.N.U.
  BSc
Honorary Associates
David F. Branagan, PhD FGS
Donald W. Emerson, BE MSc U.N.S.W. PhD FAIG FAIMM
Richard Facer, BSc PhD
Stephanie Fahey, BA PhD
James Gardner, PhD
John P. Hudson, MA PhD A.N.U.
Ronald Horvath, MA PhD
Robert A. Jones, BEng W.Aust. MEng Auck. MSc Lond.
Jack Massey, MA Melb. PhD
Dona Mihut, PhD
Louis Moresi, PhD
Gordon Packham, BSc PhD
Graeme Philip, BSc MSc DSc Melb. PhD Cantab.
Peter Roy, BSc PhD Imp.Coll.
Robin F. Warner, BA Birm. PhD N.E.
Edward Wheelwright, DFC MA St.And.
Senior Technical Officers
Nelson Cano
Karen Lease, BSc
Graham Lloyd
Philip Manning
David Mitchell
Tom Savage
Administrative Officers
Maria Amilbangsa
Margaret Herczeg
Erica Jobling

Mathematics and Statistics

Professors
Edward Norman Dancer, BSc A.N.U. PhD Camb., FAA.
  Appointed 1993
Eugene Seneta, MSc Adel. PhD A.N.U., FAA. Appointed 1979
Professor in Pure Mathematics (Personal Chair)
Gustav Isaac Lehrer, PhD Warw. BSc. Appointed 1990
Professor in Mathematical Statistics (Personal Chair)
John Robinson, BSc Qld PhD. Appointed 1991
Readers
John J. Cannon, MSc PhD
Donald I. Cartwright, PhD Ill. BSc
Jonathan Hillman, BSc W.Aust. AM Harv. PhD A.N.U.

King-Fai Lai, BSc Lond. MPhil PhD Yale
Associate Professors
Christopher J. Durrani, MA PhD Camb.
Terence M. Gagen, BSc Qld PhD A.N.U.
William G. Gibson, MSc Cant. PhD U.N.S.W.
Robert B. Howlett, BA PhD Adel.
Ronald W James, BSc PhD
Malcolm P. Quine, MSc Lond. PhD A.N.U.
Donald E. Taylor, MSc Monash DPhil Oxf.
Neville C. Weber, MSc PhD
Director of Junior Studies
William D. Palmer, MLitt MA N.E. BSc PhD DipEd
Senior Lecturers
Peter W. Buchen, PhD Camb. BSc
Koo-Guan Choo, BSc Nan. MSc Ott. PhD Br.Col.
Christopher M. Cosgrove, BSc PhD
David Easdown, BA A.N.U. PhD Monash
Roger W. Eyland, PhD Camb. MSc
W. Barrie Fraser, BSc ME Cant. SM PhD Harv.
David J. Galloway, BA PhD Camb.
Hugh C. Luckock, BSc Auck. PhD N'cle(U.K.)
Charles C. Macaskill, BSc PhD Adel.
Mary R. Myerscough, DPhil Oxf. MSc
Gordon P. Monro, BSc Monash PhD Brist.
Nigel R. O'Brian, MA Camb. PhD Warw.
M. Shelton Peiris, DipMatli MSc Peradeniya PhD Monash
Mary C. Phipps, MSc
James N. Ward, BSc PhD
Karl H. Wehrhahn, BSc Alta PhD
Lecturers
Sandra C. Britton, BSc U.N.S.W. MA
Howard J. D'Abrera, PhD Calif. BSc
Daniel Daners, PhD Zurich
Humphrey M. Gastineau-Hills, MSc PhD
Jenny Henderson, DipEd Flin. MSc
David J. Ivers, BSc PhD
Andrew P. Mathas, BSc MSc PhD Hl.
Alexander I. Molev, Diploma PhD Moscow
Adrian M. Nelson, PhD Lond. BSc
Marc Raimondo, BSc MSc DipStats PhD Paris VII
Rosemary S. Thompson, BSc A.N.U. PhD
Associate Lecturer
Michael Stewart, BSc MA
Computer Systems Officers
Robert B. Pearson, BSc ADipA M.C.A.E.
James S. Richardson, PhD Warw. MSc
Paul Szabo, BSc Havana
Michael R. Wilson, BSc
ARC *Postdoctoral Research Fellow*
Mark Kisin, BSc Monash MA PhD Princeton
Postdoctoral Fellows
Stephen G. Lack, BSc PhD Camb.
Senior Research Associates
Scott P. Contini, BSc Purdue MSc Georgia MSc Wis.
David R. Kohel, BSc Texas A&M PhD Berkeley
Dung Le, BSc Hochiminh DipMath Triests PhD Arizona
Laurentiu Paunescu, MSc Bucharest PhD
William R.Unger, BSc PhD
Nanhua Xi, BSc Huaihua Institute, MSc PhD East China
  Norm. Uni (S'hai)
Research Associates
Geoffrey Bailey, BSc
Jane Sexton, BSc PhD Qld.
Senior Research Assistants
Allan K. Steel, BA
Research Assistants
Anne P. Cannon, BA Mphil
Paulette Lieby, BSc N.T.U.
Nicole J. Sharp, BSc Macq.
Administrative Officer
Deirdre Lawrie, MA Dund.

Administrative Assistants
Flora Armaghanian
Viola Chao
Janet Doyle
Jan Love
Sonia Morr
Julie Small
Honorary Appointments
Emeritus Professors
Gregory Maxwell Kelly, BA PhD Camb. BSc, FAA
Gordon Elliott Wall, BSc Adel. PhD Camb., FAA
Peter Robert Wilson, BA MSc Melb. PhD, FRAS
Honorary Reader
Tzee-Char Kuo, BS Natal Taiwan PhD Chic.
Honoraiy Associate Professors
Edward D. Fackerell, MSc PhD
John M. Mack, MA Camb. BSc PhD
Denis E. Winch, MSc PhD, FRAS
Honorary Senior Lecturer
W Barrie Fraser, BSc ME Cant. SM PhD Harv.
Honorary Associates
Geoffrey RBalL BA
Donald W. Barnes, DPhil Oxon. BSc
David C. Edelman, MPhil PhD Col. SM M.I.T.
Brian Gray, PhD BSc Mane, FRACI FRSC
Michael S. Johnson, BSc PhD
Ross H. Street, BSc PhD
Shu-Hao Sun, BSc MSc Shannxi Normal PhD Sichuan

Microbiology

Professor
Peter Richard Reeves, BSc PhD Lond., MASM.
    Appointed 1985
Reader
Thomas Ferenci, BSc Lond. PhD Leic.
Senior Lecturers
Trevor Duxbury, BSc PhD Liv., MASM
Ian Humphery-Smith, BSc PhD Qld
Peter B. New, BAgrSc Tas. PhD Adel.
Lecturers
Deidre A. Carter, BSc Otago PhD Lond.
Dze Dalins, MSc
Associate Lecturers
Helen M. Agus, MSc U.N.S.W, MASM
Honorary Appointments
Honorary Associates
K. Yip Cho, BSc U.N.S.W. PhD A.N.U.
William G. Murrell, PhD Oxf. DScAgr, FAIFST MASM

Pharmacology

Professor of Clinical Phannacology
J. Paul Seale, MB BS PhD Lond. FRACP. Appointed 1992
Professors
Judith L. Black, MB BS 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 Professors
MacDonald J. Christie, BSc Flin. PhD
Rosemarie Einstein, BSc PhD
Ewan J. Mylecharane, BPharm V.I.C. BSc PhD Melb.
Graham A. Starmer, MSc Mane. PhD
Clinical Associate Professor
Geoffrey G. Duggin, MB BS PhC, FRACP FAFPHM
Senior Lecturers
Robin D. Allan, BSc Qld PhD James Cook
Peter R.A. Johnson, BSc PhD
Christopher Liddle, MB BS BSc(Med) U.N.S.W. PhD,
    FRACP

Hilary G.E. Lloyd, BSc Brist. MSc PhD Lond.
Jill E. Maddison, BVSc PhD, FACVSc
Ian Spence, BSc PhD Monash
Lecturer
Robert J.Vandenberg, BSc PhD
Associate Lecturer
Izabela M. Brzuszczak, BSc PhD
Research Fellow
Mark A. Connor, BSc PhD Washington
Honorary Appointments
Adjunct Professor
Susan M. Pond, AM, MB BS MD U.N.S.W, FRACP FTSE
Honoraiy Associates
Sandra D. Anderson, PhD Lond. BSc
James Bell, BA MB BS, FRACP
Hugh R, Capper, BSc PhD
Noel J. Chambers, BSc PhD
Gregory B. Chesher, MSc PhD
L. Bruce Cobbin, BSc Melb. PhD
Richard Donnelly, MB ChB MD Birm. PhD Glasgow MRCP
    FRACP
Peter Gray, BSc PhD
Annette S. Gross, BPharm PhD
Merlin E. H. Howden, BSc PhD Caltech
Michael Kassiou, BSc U.N.S.W. PhD U.N.S.W.
David LB. Kerr, BSc PhD Adel.
Desmond J. Maddalena, DipTech N.S.W.I.T. BAppSc
    N.S.WI.T. MAppSc N.S.WI.T. PhD
Jennifer Ong, BSc PhD Adel.
Laurent P. Rivory, BVSc Qld PhD Qld
Diana M. Temple, BSc W.Aust. MSc PhD
Sandra N. Webb, BPharm V.I.C. PhD Strath.

Pharmacy

Professor of Pharmaceutical Chemistry
Basil Don Roufogalis, MPharm PhD DSc, MPS.
    Appointed 1989
Professor of Pharmacy Practice
Shalom Isaac Benrimoj, BPharm PhD Bradford, MPS.
    Appointed 1991
Professor of Pharmaceutics
Kenneth Frederick Brown, MPharm PhD, MPS.
    Appointed 1992
Reader
H.T. Andrew Cheung, MSc H.K. DIC PhD DSc Lond., FRACI
    FRSChem
Associate Professors
Carol L. Armour, BPharm PhD, MPS
Gerald M. Holder, PhD Lond. MSc, MPS
Douglas E. Moore, MSc PhD
Senior Lecturers
Hak-Kim Chan, BPharm N.D.M.C. Taipei PhD
David J. Cutler, PhD Lond. BPharm MSc
Colin C. Duke, BSc Qld PhD James Cook, MRACI
Ines Krass, BPharm GradDipEd DipHPharm PhD, MPS
Michael B. Morris, BSc PhD
Iqbal M. Ramzan, DipPharm C.I.T. N.Z. MSc PhD
Lecturers
Timothy F. Chen, BPharm DipHPharm, MPS
Neal Davies, BSc PhD Alberta
EhzabethM. Gipps, MPhannV.I.C. DrScNat E.T.H. Zurich
    DipHPharm, MPS MRPharmS
Michael Ivery, BSc N.S.W.I.T. PhD
Andrew J. McLachlan, BPharm PhD, MPS MACPP
Susan J. Taylor, MSc Lond. BPharm, MRPharmS
Associate Lecturers
Rebekah Moles, BPharm, DipHPharm
Erica Sainsbury, BPharm MSc, GDipEdStudies MPS
Suzann Sime, BSc U.N.S.W.

Joint Appointments - Teacher Practitioners !
Ben J. Basger, BPharm MSc DipHPharm, MPS
Barbara Bazarnik, BSc BPharm Lond.

Alexandra Bennett, BPharm DipHPharm
Jason Campbell, BPharm DipHPharm
Betty Chaar
Cath Dwyer, BPharm DipHPharm
Ceridwyn Jones, BPharm DipHPharm
Ainslie Sanbrook, BPharm DipHPharm
Academic (Research only)
Vadim Dedov, BMMS PhD Yekaterinburg
Margaret Hughes, BSc PhD
Van Hoan Tran, BPharm PhD
Postdoctoral Fellows
Alaina J. Ammit, BAppSc U.T.S. MSc PhD
Romina Nand, BSc PhD Melb.
Andrew Schrader, BSc PhD Monash
Van Hoan Tran, BPharm PhD
Professional Officers Grade PV
Warren A. Olsen, BCom U.N.S.W. BPharm MSc, MPS
Fred T.K. Wong, DipMedTech S.T.C. MSc, FACBS
Professional Officer Grade III
Bruce N. Tattam, MSTIA
Project Officer
Genevieve Peacock, BPharm DipHPharm
Senior Research Assistants
Abilio deAlmeidaNeto, BSc U.N.S.W.
Kam Hung Ng
Research Assistants
Damien Liu-Brennan, BMedSc
Linda Gelgor, MSc PhD Sth Africa
Senior Technical Officers
Helen Elimelakh, BE Mendeleev Inst.
BillRae
Jiamin You, BSc Shanghai
Technical Officers
Neville J. Baker, ADAS Syd.Inst.Tech.
Christopher J. Hick, ADAS Syd Inst.Tech
Catherine H. Mortimer, BSc DipEd ADAS Syd.Inst.Tech.
Teaching Quality Project Officer
Jay Mukhraiya, BEng Bhopal Mtechnol HTDelhi
Laboratory Assistant
Jenny Bell
Administrative Officer
Susan Putnam
Margaret Trimble (PPF)
Administrative Assistants
Catherine Eaton
Maxine Mackellar, BA
Rages Palinasamy
Lynnette White
Computer Officer
Nicole Haywood, BMath N'cle (N.S.W.)
Librarian
Eva Wetzlich
Attendant
Jay O'Sullivan
Glassware Cleaners
Freda Kambosos
Win Kyi

Herbal Medicines Research and Education Centre (HMREC)

Executive Director
Professor Basil Don RoufogaUs, MPharm PhD DSc, MPS
Director (Ex Officio)
Professor Shalom Isaac Benrimoj, BPharm PhD Bradford, MPS
Director—Research Programs
Dr H.T. Andrew Cheung, MSc H.K. DIC PhD DSc Lond., FRACI FRSChem
Director—Education Programs
Dr Colin C. Duke, BSc Qld PhD James Cook, MRACI

Director-Tradtional Medicine & International Programs
Professor Yun Cheung Kong
Director —Analytical Programs
Associate Professor Douglas E. Moore, MSc PhD
Coordinator
Dr George Q. Li

Honorary Appointments

Professorial Fellow
Barry J. Allen, PhD W'gong DSc Melb., FAIP
Honorary Associate
Anne Keogh, MB BS MD FRACP
Honorary Clinical Senior Lecturers
Kingsley Ng, BPharm MSc DipFDA, FSHP FAIPM MPS
Jennifer Schneider
Honorary Clinical Lecturers
Gillian Gorrick
Linda Graudins
Maxine Robinson
Honorary Clinical Associate Lecturer
Judy Mullan

Physics

Professor of Physics (Theoretical Physics)
Donald Blair Melrose, BSc Tas. DPhil Oxf., FAA.
  Appointed 1979
Professor of Applied Physics
Richard Edward Collins, PhD N.Y. BSc, FTS FTE.
  Appointed 1980
Professor of Physics (Astrophysics)
Lawrence Edward Cram, BSc BE PhD. Appointed 1987
Professor of Physics (Astronomy)
John Davis, BSc PhD Mane. Appointed 1987
Professor of Physics (Physical Optics)
Colin J.R. Sheppard, MA PhD Camb. DSc Oxf.
  Appointed 1989
Professor in Physics (Electromagnetic Physics)
Ross C. McPhedran, BSc PhD Tas.
Professor in Physics (Materials Physics)
David R. McKenzie, BSc PhD U.N.S.W.
Readers
Martijn de Sterke, MEng Delft PhD Rochester
Richard W Hunstead, BSc PhD
Peter A. Robinson, BSc PhD
Associate Professors
Rodney C. Cross, BSc PhD DipEd
Robert G. Hewitt, BSc PhD
Brian W. James, BSc PhD
Ian D.S. Johnston, BSc Qld PhD
Bernard A. Pailthorpe, BSc U.N.S.W. PhD Indiana
Lawrence S. Peak, BSc PhD
Industry Liaison Officer
Maurice J Barton, BSc Brighton Coll Tech MSc Oxf. PhD Aston
Senior Lecturers
Timothy R. Bedding, BSc PhD
G. Fergus Brand, MSc Otago PhD
Carol J. Cogswell, MA MArch Oregon
Neil F. Cramer, BSc PhD
David F. Crawford, BSc PhD
Anne Green, BSc Melb. PhD
James B.T. McCaughan, MSc PhD
John W O'Byrne, BSc PhD
J. Gordon Robertson, BSc Adel. PhD
William J. Tango, BS Calif. PhD Colorado
Juris Ulrichs, BSc PhD
Lecturers
Ian J. Cooper, BSc MPhysics DipEd U.N.S.W.
Joseph Khachan, BSc PhD U.N.S.W.
Rosemary M. Millar, BSc Qld MEd

Associate Lecturers
Manjula D. Sharma, MSc DAPh S.Pac.
Senior Research Fellow
David R. Mills, BSc PhD U.N.S.W.
ARC Senior Research Fellows
Iver H Cairns,BSc PhD
Elaine M. Sadler, BSc Qld PhD A.N.U.
Kevin E. Varvell, BSc W.Aust. DPhil Oxf.
ARC *Queen Elizabeth II Research Fellows*
Lewis T.Ball, BSc PhD
Simon Johnston, BSc Edin. PhD Mane.
Kinwah Wu, MS PhD Louisiana
Qi-Chu Zhang, MSc PhD U.N.S.W.
ARC Research Fellows
Sergei Vladimirov, MSc PhD Moscow Inst.Phys.&Eng.
U2000 Postdoctoral Fellows
Peter G Tuthill, BSc Qld BSc (Hons) A.N.U PhD Camb.
Michael S Wheatland, BSc PhD
Andrew J Willes, BSc PhD
ARC Postdoctoral Fellows
Hao He, BSc PhD U.Q.
Postdoctoral Fellows
Ara Asatrian, MSc Yerevan State Uni. PhD Moscow
Christopher Dey, BSc PhD
Vikram Dwarkadas, BTech Indian InstTech.B'bay MA
    Virginia PhD Virginia
Pal Fekete, BSc PhD
Grant Gorfine, BSc(Hons) Melb. PhD Melb.
Manfred Lenzen, Diploma Bonn PhD Bonn
Nigel Marks,
Nicolae Nicorovici-Porambaru, MSc Bucharest PhD
    Inst.At.Phys. Bucharest
Eric Rowe, BSc PhD
Maitreyee Roy, BSc MSc MPhil Rani Dorgauati PhD
Eugene B. Seneta, PhD U.T.S. BSc MSc
Irina Talanina, MSc Moscow Physical Tech Inst. PhD
    MoscowPhysical Tech Inst.
Edward Tsoy, MSc Leningrad Poltech.Inst. (St P'berg) PhD
    Tashkent Uni. (Uzbekistan)
Jeanette I. Weise, BSc PhD Melb.
Senior Research Fellow
Jennifer A. NichoUs, BSc Flin.PhD Durh
Research Fellows
Michelle C. Storey, BSc PhD
Mark J. Wardle, MSc Auck. PhD Princ.
Professional Officers
Andrew Bakich, MSc
Duncan Campbell-Wilson, BSc A.N.U.
S. Reza Hashemi-Nezhad, MSc PhD Birm.
Philip B. Lukins, PhD
Julius Sumner Miller Fellow
Karl Kraszelnicki, BSc MBioMedE U.N.S.W. MB BS

Special Research Centre forTheoretical Astrophysics
Director
Donald B. Melrose, BSc Tas. DPhil Oxf., FAA
Senior Research Fellows
Simon Johnston, BSc Edin. PhD Mane.
Jennifer A. NichoUs, BSc Flin. PhD Durh.
Research Fellows
Michelle C. Storey, BSc PhD
Mark A. Walker, BA Oxf. PhD Perm.
Mark J. Wardle, MSc Auck. PhD Prin.
Postdoctoral Fellows
Eric Rowe, BSc PhD
Jeanette I. Weise, BSc PhD Melb.
Honorary Appointments
Emeritus Professors
Maxwell Howard Brennan, AO, HonDSc Flin. BSc PhD, FAA
Robert Hanbury-Brown, AC, BScEng DIC Lond. DSc Mane,
    FRS FRAS FAA HonFNA HonFASc MTEE
Charles B.A. McCusker, DSc Mane, MRIA

Harry Messel, CBE, BSc Qu. PhD N.U.I.
Bernard Y. Mills, BSc ME DScEng, FAA FRS
Adjunct Professor
Russell D. Cannon, BA MA PhD Camb.
Honorary Readers
Graham Derrick, BSc Qld PhD
Michael I. Large, BA PhD Camb.(
Honorary Associate Professors
Veronica James, BA BSc U.Q. PhD U.N.S.W, OAM
Brian McInnes, BSc PhD Qld
Murray Winn, BSc PhD Birm.
Honorary Senior Lecturers
Roy Allen, BSc(Hons) Manch. PhD Manch. (Jodrell Bank)
Ian M. Bassett, MSc PhD Melb.
Ian S. Falconer, MSc N.Z. PhD A.N.U.
Bruce McAdam, MSc N.Z. PhD Camb.
Ian Sefton, MSc
Robert Shobbrook, BSc St. And. PhD A.N.U.
Anthony J. Turtle, BA PhD Camb.
Honorary Research Associates
Joss Bland-Hawthorn, BSc Aston Uni (B'ham) PhD Sussex
    Uni. & Royal G'wich Observ.
Sergei Bulgakov, MSc Kharkov State Uni. PhD Kharkov State
    Uni.
Lindsay C. Botten, BSc Tas. PhD
Russell D. Cannon, BA MA PhD Camb.
Noella D'Cruz, BTech Indian Inst.Tech B'bay MA Vrrgina
    PhD Virginia
Ian J. Donnelly, BSc PhD
Anthony Fischer-Cripps, BAppSc U.T.S. PhD
Catherine Foley, DipEd Macq. PhD Macq. BSc(Hons)
Peter French, PhD Deakin BSc MSc
Julienne I. Harnett, DipT Tas.C.A.E. BA Macq. PhD
Charlene Heisler, BSc BSc U. Calgary MSc MPhil PhD Yale
Rolf Howlett, BVSc PhD, MRCVS MRCVSc EBSE
David L. Jauncey, BSc PhD
Peter Krug, BSc(Hons) PhD
Richard N. Manchester, BSc Cant. PhD N'cle(N.S.W.)
Phillip Martin, BSc(Hons) Aston Uni. (B'ham) PhD A.N.U.
Graham Morrison, BE Melb, PhD Melb.
Helen Pongracic,
Sumita Singh, BSc MSc Delhi U. PhD Patna U.
Lindsey F. Smith, BSc PhD A.N.U.
Paul Soler, BSc Uni. Autonoma de Madrid, PhD
Stephen Spencer, MSc U.N.S.W. BSc(Hons) PhD
Visiting Professors
Parameswaran Hariharan, BSc Travancore PhD Kerala
Colin A. Norman, BE Melb. DPhil Oxf.

Physiology

Professors
John Atherton Young, AO, BSc(Path) MD BS DSc Qld,
    FRACP FAA. Appointed 1976
MaxweU Richard Bennett, BE MSc PhD Melb. DSc, FAA.
    Appointed 1983
David Grant AUen, BSc MB BS PhD Lond. Appointed 1989
Ann E. Sefton, BSc(Med) MB BS PhD DSc. Appointed 1992
Roger A.L. Dampney, PhD DSc. Appointed 1997
David I. Cook, BSc(Med) MB BS MSc (the University of
    Sydney Medical Foundation FeUow). Appointed 1997
Brian J. Morris, BSc Adel. PhD Monash DSc. Appointed 1999
Readers
Joseph F.Y. Hoh, PhD A.N.U. BSc(Med) MB BS DSc
Associate Professors
David F. Davey, BSc PhD McG.
Rebecca S. Mason, MB BS PhD
Christopher O'NeUl, BSc PhD N'cle(N.S.W.) (Clinical
    Associate Professor at Royal North Shore Hospital)
Paul PUowsky, BMedSc BMBS PhD Flinders (at Royal North
    Shore Hospital)
Senior Lecturers
Simon Carlile, BSc PhD (conjoint appointment in the
    Department of Education, Development & Evaluation)

Staff

Paul R. Martin, BSc PhD
William D. Phillips, BSc PhD
Lecturers
Lyme J. Cottee, BSc PhD (half-time & Research Officer)
Margot Day, BSc PhD - NHMRC
Miriam Frommer, PhD Lond. BSc
Associate Lecturer
Francoise Janod-Groves, BSc N.S.W.I.T. MApplSc U.T.S.
Irene Schneider, BSc U.N.S.W. MSc(Prelim)
Joint Appointees
Annick Ansselin, BA Macq. MSc PhD (Lecturer)
Visiting Fellows/Scholars
Jouji Horiuchi, BSc PhD Yamanashi
Zhao Bo Li, BSc PhD Beijing University
Meloni Muir, BSc Purdue PhD McGill
Tatsuya Tagawa, MD PhD Kyushu
Cuijiao Wu, MB BS Quingdao, MMed China Med Univ
Honorary Appointments
Emeritus Professor
William Burke, BSc PhD Lond.
Research Affiliate
Lyn R Griffiths, BSc NSW PhD (Senior Lecturer at Griffith
   Univ, Gold Coast)
Honorary Associate Professor
Barry S Gow, MDS PhD, FRACDS
Honorary Research Associate
Michael DL Slater, BSc NSW PhD FATMS
Brett Wells, BSc PhD ANU
Postdoctoral Research Fellows
Anuwat Dinudom, MSc PhD - Medical Foundation
Xiaohui Xiao, MD PhD Beijing Med Univ
Senior Research Associate
Ulrike GrYnert, BSc PhD Frankfurt - ARC
Senior Research Officers

Permsak Komwatana, MS PhD Charlottesville - NHMRC
Philip Poronnik, BSc PhD - ARC
Yi-kun Lou, BMed Qingdao PhD - NHMRC
Research Officers
Yue-Kun Ju, MD Xian PhD ANU - NHMRC
Akram Kabbara, BScMelb PhD Latrobe - NHMRC
Lucia H Kang, MD MSc Korea PhD - ARC
Jaimie Poison, BSc PhD - NHMRC
Angeles Sanchez-Perez, BSc PhD Salamanca
 Christine Lucas, BSc PhD - NHHMRC
Research Assistants
Full-time
Anna Corderoy, BSc Wollongong - ARC
Jeremy Hogan, BMedSc - NHMRC
Lauren O'Mullane, BBiomedSc Wollongong
Shalini Jayram, BE NSW
Ana Lara, BSc Univ Republic
Research laboratory staff
Jiangbo (Lucia) Gan, BE ME Xidian Univ - Technical Officer
Judith O'Neill, RN BA(Health Sci-Nursing) Charles Start
   (part-time)
Laboratory assistant
Anandhi Anandan, BSc Bharathiyar Univ
Class laboratory staff
John F Cossey, BTC STC - Senior Technical Officer (in-
   charge)
Adel Mitry, B VSc Cairo ACC STC - Senior Technical Officer
Electronics workshop staff
Vincent HW Cheung, HND Hong Kong Polytechnic CEI Part
   2 UK - Senior Technical Officer
Computing staff
John WA Dodson, HNC Lond MTEEIEI Eng - Computer
   Network Manager
Josephine Chee
Senior Administrative Officer
Paddy Fitzgerald, BCom W'gong GradDipBus Monash

Administrative Officer
Michele L Foord
Administrative Assistants
Louise Ciciriello, BSc
Margaret Dunne

Psychology

Professors
Robert Alan Boakes, BA Cant. PhD Harv. Appointed 1989
Stephen W Touyz, BSc PhD CapeT. BSc Witw. Appointed
   1996
Ian S. Curthoys, BA PhD Monash . Appointed 1997
Readers
Dale M. Atrens, BA Windsor MA Hollins PhD Rutgers
Lazar Stankov, MA Belgrade PhD Denver
Senior Lecturers
Diana Caine, BA U.N.E. BSc(Hons) Melb.
   MA(Hons)(ClinNeuropsych) Melb. PhD
Brian D. Crabbe, BA PhD
Alan E. Craddock, BA PhD
Deborah Erickson, BA Houghton CoU. NY. MA Alf Uni. D.Ed
   Uni Ark. USA
Pauline Howie, BA PhD U.N.S.W.
Caroline Hunt, BSc(Hons) MPscyhol PhD U.N.S.W.
R. F. Soames Job, BA PhD
Cyril R. Latimer, BA PhD
David J. Livesey, BSc PhD W.Aust.
Roslyn H. Markham, MA PhD
Iain McGregor, MA Oxf. PhD
Terence McMullen, BA PhD
JoelB.MichelLBAPhD
John M. Predebon, BA PhD
Michael B. Walker, BSc U.W.A. BA Adel. DPM Oxf.
Leanne Williams, BSSc U.N.E. BA(Hons) U.N.E. PhD U.N.E.
Lecturers
Margaret Charles, BA PhD
James Dalziel, BA
Richard Roberts BA (Hons) PhD
Janet Wilson, BSc (Hons), MClinPsych PhD Uni Otago
Rick van der Zwan, BSc PhD
Associate Lecturers
Dianne Clark, BA UNSW
Fiona Hibberd, BA PhD
Gina Sartore, BSc GradDip A.N.U.
Mark Yates, BA
Professional Officer
Kate Baggs, BA MPsych
Administrative Officers
Sandra Cheng, BBus UTS MCom CPA
Anne Kwan, BA DipEd CUHK
Administrative Assistants
Tricia Berger, BEd SA MEd Qld
Cindy Li
Louise Nelson

Margaret Smith, BA W'gong.
Tracy Watts, BA(Hons) Wgtn
Head of Computer and Technical Seiyices
John Holden

Manager of Computer Seiyices
Yoichi Takayama, MSc Tohoku PhD Niigata
Computer Systems Officers
Siu Yau Kho, BSc(Hons) HK MBioMed.Eng UNSW
King Sing Shun, DipElectEng. BTech Macq.
Senior Technical Officers
Warren Davies
Raj a Vij ay enthiran
Technical Officers
Kerry Smith
Darek Figa
Animal House Attendants
Deborah Brookes
Lucy Maguire

Attendant
Matthew de Bois
Honorary Clinical Lecturers
Clive Allcock, BSc MB ChB NZ LTCL Lond. FRANZCP
Susan Ballinger, BA(Hons) Macq PhD
Phyllis N. Butow, BA PhD
Rocci Crino, BSc MPsych PhD UNSW
James Guinan, BSc DipEd MSc MPsych UNSW PhD
PMlippa Hedges, BA MA Melb.
Evelyn Howe, BA(Hons) PhD
Nicholas Marlowe, BA PhD
Helen McCathie, BA MClinPsych PhD
Barbara Newton, BA U.N.E. PhD Macq
Michael Nicholas, BA PhD
Michael Perdices, BA MA Clin.Psych Melb PhD UNSW
Suzanne Roach, BAfHons) Macq MAClinPsych Macq
Lynne Sweeney, BA MA Clin.Psych Calif State, PhD LA
Stephanie Whitmont, BA USA MPsych PhD
Michael Young, BA Macq. MPsych PhD UNSW
Honorary Clinical Supervisors
Mr Robert Armstrong, Clinical Psychology, North Ryde
Ms Vera Auerbach, Redbank House, Westmead
Dr Susan Ballinger, Stamdish Medical Centre, Nowra
Mr Gary Banks, Disability Resources Inc,, West Chatswood
Mr Christopher Basten, Department of Medical Psychology, Westmead
Ms Sharmilla Betts, Sydney Children's Hospital, Randwick
Mr Grant Betts, Department of Psychology, Randwick
Assoc. Prof. Alex Blaszynski, Liverpool Hospital, Liverpool
Ms Carol Boland, Paediatric Mental Health Team, Liverpool
Ms Philippa Bowden, Parramatta Sexual Health Clinic, Parramatta
Ms Naomi Brookes, Brian Injury Unit, Randwick
Dr Diana Caine, Neuropsychology Unit, Dept of Psychiatry, Camperdown
Ms Linda Chamberlain, Royal Blind Society, Burwood
Mr Nick Cocco, Broadway Adolescent and Family Health Services, Glebe
Mr Ulan Cohen, Dover Heights
Ms Kathryn Craft, Psychological Health service, Campbelltown
Mr Rocco Crino, Anxiety Disorders Unit, Darlinghurst
Mr Jeroen Decates, Hillview Health Centre, Turramurra
Ms Gabrielle Duffy, Burwood Child & Family Health Team, Burwood
Mr Bob Duncan, Cremorne Community Health Centre, Cremorne
Ms Danielle Einstein, Anxiety Unit, Westmead
Ms Julie Erskine, University of New South Wales Counselling Services, Sydney
Ms Megan Forbes, Calvary Hospital, Kogarah
Ms Eleanor Gait, Department of Psychology, Concord
Mr Jonathan Gaston, University of New South Wales Counselling Service, Sydney
Ms Leah Giarratano, St John of God Hospital, North Richmond
Mr Fernando Gomez, Psychiatry Department, Taren Point
Ms Lia Gould, Arndell Children's Unit, North Ryde
Mr James Guinan, Royal Prince Alfred Hospital, Camperdown
Mr Timothy Hannan, Department of Rehabilitation, Westmead
Mr George Haralambous, Arndell Children's Unit, North Ryde
Ms Raelene Hartman, Sutherland Division of Mental Health, Sutherland
Dr Evelyn Howe, Private Practice, Wahroonga
Ms Susan Johnson, Department of Psychological Medicine, Westmead
Ms Liz Kenway, Queenscliff-Dalwood Assessment Centre, Seaforth
Ms Christine Kipps, Child, Adolescent & Family, Hornsby
Ms Debbie Knight, Queenscliff-Dalwood Assessment Centre, Seaforth
Ms Elizabeth Kobylinska, Long Bay Hospital, Mattraville
Ms Sarah Lam, Psychological Health Services, Campbelltown
Mr Peter Mangioni, Clinic 8, OPD, Concord

Ms Nicola Marriott-Lloyd, Royal Rehabilitation Centre Sydney, Ryde
Ms Kaye Matthews, Psychology Department, Concord
Ms Antonia McKinnon, Department of Psychology, Rozelle
Mr Michael McMahon, Calvary Hospital, Kogarah
Mr Brian O' Grady, University of New South Wales Counselling Service, Sydney
Mr Salih Ozgul, Bankstown Community Health Centre, Bankstown
Mr Michael Parle, Liaison Clinical Psychologist, Darlinghurst
Ms Polly Pickles, Child Development Unit, Westmead
Mr Robert Pringle, Queenscliff Community Health Centre, North Manly
Dr Marija Radojevic, Child, Adolescent and Family Service, Hornsby
Mr Phil Renner, Child & Adolescent Mental Health, Campbelltown
Mr Kris Revson, Queenscliff Health Centre, North Manly
Ms Tanya Sackville, St Vincent's Mental Health Service, Darlinghurst
Mr Tom Schick, Broadway Adolescent and Family Health Services, Glebe
Mr Dieter Schlosser, Clinic 8 OPD, Concord
Mr Tim Sharp, Pain Management - 9C, St Leonards
Ms Julie Simmons, Queenscliff Health Centre, Brookvale
Mr Thiagarajan Sitharthan, Drug and Alcohol Unit, North Parramatta
Ms Katharine Smith, Gynaecological Oncology, Westmead
Ms Melissa Staples, Royal Rehabilitation Centre Sydney, Ryde
Dr Barbara Wardman,, Vaucluse
Ms Anne Wignall, Child And Family Psychiatry, Block 4, St Leonards
Dr Crista Wocadlo, King George V Hospital, Camperdown
Mr Michael Young, University of Sydney Counselling Service, Sydney
Dr Vito Zepinic, Hillview Health Centre, Turramurra
Dr Fazeela Zoifaghari, St John of God Hospital, North Richmond
Honorary Appointments
Pierre J. Beumont, MB ChB Pretoria DPM (RCP) Lond.MRCP Edin. M Phil Lond.MRCPsych UK MSc Oxf. FRC Psych UK FRACP FRANZCP FRCP Edin.
Olga Katchan, BA
David Kavanagh, BA Dip Psych PhD Stanf.
George Oliphant, BA PhD
Emeritus Professors
Richard Annells Champion, MA FASSA
Philip Ley, BA Mane. PhD Liv. DipPsych Lond.
John Philip Sutcliffe, MA PhD FASSA

Other Units

Australian Key Centre for Microscopy and Microanalysis

Director
David John Hugh Cockayne, MSc Melb. DPhil Oxf.
Deputy Directors
David R McKenzie, BSc PhD U.N.S.W
Carol J Cogswell, MA MArch Oregon
Research Director
Colin J R Sheppard, BSc PhD U.N.S.W.
Education Coordinator
Anil Singh Prakash, BSc Auck.

Centre for Research on Ecological Impacts of Coastal Cities

Director
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    State U.
Miles HosMn, BSc Hons Plymouth PhD W'gong
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Coastal Studies Unit

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History and Philosophy of Science Unit

Director
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Lecturer
Katherine M. Neal, BSc Houston M.A Toronto PhD Toronto
Administrative Assistant
Gail Stewart, BA GDipSecStudies

Immunology Unit

Unit Head
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Senior Lecturer
Robert H Loblay, MB, BS, PhD (Sydney), FRACP
Lecturer (Undergraduate study coordinator)
Helen Briscoe, BSc, PhD (Edinburgh)

Institute of Marine Ecology

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Melanie Dionne
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    GradDipSc U.Qld
Vanessa Mathews, BSc
Kade Mills, BSc(Hons
Julie People, BSc(Hons)
Alison Phillips, BSc(Hons) U.Tas.
Matthew Sage, BSc GradDipEnvSci
Nicholas Yee, BSc(Hons) Melb.
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Honorary Associate
Professor J. Howard Choat, BSc Wellington PhD Qld
Research Affiliates
KLAstles,BScMSc
Steven J. Kennelly, BSc PhD
Nicholas M. Otway, BSc PhD
GASkiUeter,BScPhD

Marine Studies Centre

Director
Andrew D. Short, MA Hawaii PhD Louisana State BA

Mathematics Learning Centre

Lecturer in Charge
Jacqueline M. Nicholas, MSc Hull
Lecturer
Susan E. Gordon, MSc Wits. DipEd DipDatametrics S.A. PhD
Collin G. Phillips, BSc DipEd PhD
Administrative Assistant (part-time)
Cathy Kennedy

Ocean Sciences Institute

Director
Peter John Davies, BSc Leic. PhD Sheff.
Research Scientists (part-time)
Gavin F. Birch, MSc PhD DTA Cape T.
Thomas C.T. Hubble, MAppSc U.N.S.W. GradDipEd
Senior Research Fellow
Christopher Jenkins, BSc PhD Camb.
Elaine Baker, BSc LaT. MAppSc U.T.S. PhD
Research Assistant
Alison Cole, BSc U.N.S.W.

General University information

See also the Glossary for administrative information relating to particular terms.

Admissions Office

Student Centre
Ground Floor, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 4117 or +61 2 9351 4118
Fax:+61 2 9351 4869
Email: admissions@records.usyd.edu.au
The Admissions Office is responsible for overseeing the distribution of offers of admission and can advise prospective local undergraduate students regarding admission requirements. Postgraduate students should contact the appropriate faculty. If you are an Australian citizen or a permanent resident but have qualifications from a non-Australian institution, phone +61 2 9351 3611 for more information. For enquiries regarding Special Admissions (including Mature-Age Entry), phone +61 2 9351 3615. Applicants without Australian citizenship or permanent residency should contact the International Office.

Applying for a course

Prospective (intending) students must lodge an application form with the Universities Admissions Centre (UAC) by the last working day of September of the year before enrolment. Note that some faculties, such as Dentistry and Sydney College of the Arts, have additional application procedures.

Assessment

For matters regarding assessment, refer to the relevant Department.

Careers information

Courses and Careers Unit
Ground Floor, Mackie Building, KOI
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 3481
Fax:+61 2 9351 5134
Email: info@careers.usyd.edu.au
http://www.careers.usyd.edu.au
Provides careers information and advice, and help in finding course-related employment both while you're studying and when you commence your career.

Continuing Education

Centre for Continuing Education
Mackie Building, KOI
The University of Sydney
NSW 2006 Australia
Phone:+61 2 9351 2585
Fax:+61 2 9351 5022
Email: info@cce.usyd.edu.au
http://www.usyd.edu.au/cce
Bridging courses; Study skills courses; essay writing courses.

Co-op Bookshop

Sydney University Sports and Aquatic Centre, G09
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 3705 or +61 2 9351 2807
Fax: +61 2 9660 5256
Email: sydu@mail.coop-bookshop.com.au
http://www.coop-bookshop.com.au
Sells textbooks, reference books, general books and software. Special order services available.

Enrolment and pre-enrolment

Students entering first year
Details of the enrolment procedures will be sent with the UAC Offer of Enrolment. Enrolment takes place at a specific time and date, depending on your surname and the Faculty in which you are enrolling, but is usually within the last week of January. You must attend the University in person or else nominate, in writing, somebody to act on your behalf. On the enrolment day, you pay the compulsory fees for joining the Student Union, the Students' Representative Council and sporting bodies. You also choose your first-year units of study, so it's important to consult the 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.

Examinations

Examinations and Exclusions Office
Student Centre
Level 1, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 4005 or +61 2 9351 4006
Fax: +61 2 9351 7330
Email: exams.office@exams.usyd.edu.au
The Examinations and Exclusions Office looks after exam papers, timetables and exclusions.

Fees

Fees Office
Margaret Telfer Building, K07
The University of Sydney
NSW 2006 Australia
Phone:+61 2 9351 5222
Fax:+61 2 9351 4202
For information on how to pay, where to pay, and if payments have been received.

Graduations

Student Centre
Ground Floor, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 3199, +61 2 9351 4009
   Protocol+61 2 9351 4612
Fax: +61 2 9351 5072
Email: k.fizzell@records.usyd.edu.au

(Grievances) Appeals

Many decisions about academic and non-academic matters are made each year and you may consider that a particular decision affecting your candidature for a degree or other activities at the University may not have taken into account all the relevant matters. In some cases the by-laws or resolutions of the Senate (see Calendar Volume 1) specifically provide for a right of appeal against particular decisions; for example, there is provision for appeal against academic decisions, disciplinary decisions and exclusion after failure.

   A document outlining the current procedures for appeals against academic decisions is available at the Student Centre,

at the SRC, and on the University's web site at
http://www.usyd.edu.au/su/planning/policy/index.htm.
   If you wish to seek assistance or advice regarding an appeal,
contact: SRC, Level 1, Wentworth Building, G01, The
University of Sydney, NSW 2006. Phone +61 2 9660 5222.
Parking appeals should be addressed to the Manager,
Campus Services.

Health Services

Provides full general practitioner services and emergency
medical care to the University community.
Email: Director@unihealth.usyd.edu.au
http://www.unihealth.usyd.edu.au/
University Health Centre (Wentworth)
Level 3, Wentworth Building, G01
The University of Sydney
NSW 2006 Australia
Phone:+61 2 9351 3484
Fax:+61 2 9351 4110
University Health Centre (Holme)
Ground Floor, Holme Building, A09
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 4095
Fax:+61 2 9351 4338

HECS

Student Centre
Ground Floor, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 2086, +61 2 9351 5659, +61 2 9351 5062
Fax:+61 2 9351 5081

International Student Centre

International Office
Level 2, Margaret Telfer Building, K07
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 4161, +61 2 9351 4079
Fax:+61 2 9351 4013
Email: info@io.usyd.edu.au, reception@io.usyd.edu.au
http://www.usyd.edu.au/homepage/exterel/internat/
int_student_centre.html
Provides assistance with apphcation, admission and enrolment
procedures for international students.
International Student Services Unit
Level 2, Margaret Telfer Building
The University of Sydney, K07
NSW 2006 Australia
Phone:+61 2 9351 4749
Fax:+61 2 9351 4013
Email: info@issu.usyd.edu.au
http://www.usyd.edu.au/su/issu/
Provides an advisory and counselling service to international
students.

Koori Centre

Ground Floor, A22 Old Teachers' College
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 2046 General Enquiries
+61 2 9351 7003 Liaison Officer
+61 2 9351 7073 Student Counsellor
Fax: +61 2 9351 6923
Email: adminoff@koori.usyd.edu.au
http://www.koori.usyd.edu.au/
Tutorial assistance: access to computers, Indigenous
counsellor, Aboriginal Studies library study rooms,
Orientation program at the beginning of the year, and
assistance in study and learning skills. Education Unit: courses

in Educations for ATSI students. Indigenous Studies Unit:
aims to incrase the awareness of Indegenous Australian issues
through courses across the University.

Language Centre

Level 2, Christopher Brennan Building, A18
The University of Sydney
NSW 2006 Australia
Phone:+61 2 9351 2371
Fax:+61 2 9351 4724
Email: Langcent.enquiries@language.usyd.edu.au
http://www.arts.usyd.edu.au/langcent
Provides self-access course materials in over 100 languages;
beginners and intermediate courses in Spanish language and
Culture; beginners and advanced courses in Celtic languages
and cultures.

Library

Fisher Library, F03
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 2993 Enquiries/Information Desk
+61 2 9351 3711 Library Hours
+61 2 9351 7273 Borrowers' Cards
+61 2 9351 6692 Holds Enquiries
+61 2 9351 7277 Inter-library Loans
+61 2 9351 2265 Loans, overdues enquiries
   Fax: +61 2 9351 2890 Administration
+61 2 9351 7278 Renewals
Email: fishinf@Ubrary.usyd.edu.au (gen enquiries)
loanenq@Hbrary.usyd.edu.au (loan enquiries)
reqill@library.usyd.edu.au (inter-Ubrary loans)
http://www.Ubrary.usyd.edu.au
In addition to Fisher Library, there are over 20 branch and
departmentasl Ubraries. Branch and departmental Ubraries
should be contacted direct.

Mathematics Learning Centre

Fourth floor, Room 455, Carslaw, F07
The University of Sydney
NSW 2006 AustraUa
Phone:+61 2 9351 4061
Fax:+61 2 9351 5797
Email: MLC@mail.usyd.edu.au
http://www.usyd.edu.au/su/mlc/
Runs bridging courses in Mathematics at the beginning of the
academic year (fees apply), and provides on-going support
during the year through individual assistance and smaU group
tutorials.

Part-time, full-time

Students are normaUy considered as fuU-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.

Privacy and Freedom of Information

The NSW Freedom of Information (FOI) Act 1989 provides
the pubUc with a legaUy enforceable right of access to
University documents, subject to particular exemptions. The
Act also enables individuals to ensure that information held
about them is accurate, up-to-date, and complete. The
University has a number of policies permitting access by
individuals to information about themselves without recourse
to the Freedom of Information Act.
   The University necessarily accumulates a great deal of
information on individuals; within the University, access to
this is restricted to staff who need the information to carry out
their duties. As regards external requests for personal
information, it is current poUcy that the University wiU

disclose information to a third party if the subject of the information has consented in writing to the disclosure, or if the University has a legal obligation to respond to a request, including a subpoena, and the request is in the appropriate written form.

The University's Privacy Policy is to be reviewed in the light of the recent NSW Privacy and Personal Information Protection Act. Enquiries should be directed to the:
Freedom of Information Coordinator and Privacy Officer
c/-Archives, Main Quadrangle, A14
Phone:+61 2 9351 4263
Fax:+61 2 9351 7304
Email: trobinso@mail.usyd.edu.au
http://www.usyd. edu. au/su/foi

Scholarships
Research and Scholarships Office
Room K4.01, Main Quadrangle, A14
The University of Sydney
NSW 2006 Australia
Phone:+61 2 9351 3250
Fax: +61 2 9351 3256
Email: scholars@reschols.usyd.edu.au
http://www.usyd.edu.au/su/reschols/scholarships

Student Centre
Ground Floor, Carslaw Building, F07
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 3023 General Enquiries
+61 2 9351 4109 Academic Records
+61 2 9351 3023 Discontinuation of Enrolment
+61 2 9351 5057 Handbooks
+61 2 9351 5060 Prizes
Fax: +61 2 9351 5081; +61 2 9351 5350 Academic Records

Student identification cards
In 1999 the University incorporated a photograph into the student identification card. This means that all students have to provide a colour, passport-sized, head and shoulders photograph when they attend on campus sites to have their student ID card laminated. University student ID cards also function as transport concession cards for eligible students, thus eliminating the need for a separate concession card. The endorsement for concession travel will take the form of a hologram sticker attached to the front of the student ID card.

Student organisations
Students' Representative Council
Level 1, Wentworth Building, G01
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9660 5222
+61 2 9660 4756 Secondhand Bookshop
Fax: +61 2 9660 4260
Email: postmaster@src.usyd.edu.au
http://www.sec.usyd.edu.au
University of Sydney Union
Box 500 , Holme Building, A09
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9563 6000 Switchboard/Enquiries
Fax: +61 2 9563 6239
Email: email@usu.usyd.edu.au
http://www.usu.usyd.edu.au/
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.

Sydney University Sports Union
University Sports and Aquatic Centre, G09
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 4960
Fax:+61 2 9351 4962
Email: sports_union@susu.usyd.edu.au
Services, facilities and clubs for sport, recreation and fitness.
Women's Sports Association
Sports Centre, A30
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9660 6355, +61 2 9351 2057
Fax: +61 2 9660 0921
Email: secretary@suwsa.usyd.edu.au
http://www.usyd.edu.au/su/suwsa/welcome.html
Provides for students, predominantly women, to participate in sport and recreation through the provision of facilities, courses and personnel.

Student Services
http://www.usyd.edu.au/su/stuserv/
Accommodation Service
Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9351 3312
Fax: +61 2 9351 8262
Email: accomm@stuserv.usyd.edu.au
http://www.usyd.edu.au/su/accom/
Casual Employment Service
Level 4, Holme Building, A09
The University of Sydney
NSW 2006 Australia
Phone: +61 2 9552 2589
Fax: +61 2 9552 4713
Email: ces@stuserv.usyd.edu.au
http://www.usyd.edu.au/su/cas_emp/
Counselling Service
Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone:+61 2 9351 2228
Fax:+61 2 9351 7055
Email: lpoerio@mail.usyd.edu.au
www.usyd.edu.au/su/counsel/
Disability and Welfare Services
Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone:+61 2 9351 4554
Fax:+61 2 9351 7055
Email: cstuckin@mail.usyd.edu.au
http://www.usyd.edu.au/su/disability/
Financial Assistance
Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone:+61 2 9351 2416
Fax: +61 2 9351 7055
Email: psweet@mail.usyd.edu.au
http://www.usyd.edu.au/su/fin_assist
Learning Assistance Centre
Level 7, Education Building, A35
The University of Sydney
NSW 2006 Australia
Phone:+61 2 9351 3853
Fax:+61 2 9351 4865
Email: lac@stuserv.usyd.edu.au
http://www.usyd.edu.au/su/lac/
Holds free workshops to assist undergraduate and postgraduate students wanting to improve their academic writing and communication skills at university.

Glossary

This glossary both defines terms in common use in the University and gives some useful administrative information.

Enrolment and general terms

Academic year
The period during which teaching takes place, from March to November. The academic year is divided into two semesters.

Advanced standing
(See also: Credit) Recognition of previous experience or studies, meaning that the candidate has satisfied the entry requirements for a unit. Advanced standing does not reduce the number of credit points required to complete the degree course.

Associate Diploma
The undergraduate award granted following successful completion of Associate Diploma course requirements. An Associate Diploma course usually requires less study than a Diploma course.

Assumed knowledge
The level of knowledge expected for entry to a Unit of Study. Unlike prerequisites, levels of assumed knowledge are not compulsory for entry to a Unit. Students who do not have the assumed knowledge may, however, be at a considerable disadvantage and may consider completing a bridging course prior to enrolment. Contact the Learning Assistance Centre, Mathematics Learning Centre, Language Centre or Centre for Continuing Education for further information.

Bachelor's degree
The highest undergraduate award offered at the University of Sydney (other undergraduate awards are Associate Diploma and Diploma). A Bachelor's degree course normally requires three or four years of full-time study (or the part-time equivalent).

Campus
The grounds on which the University is situated. There are eleven campuses of the University of Sydney: Burren Street (Australian Graduate School of Management), Camperdown and Darlington ('Main campus'), Camden (Agriculture and Veterinary Science), Conservatorium (Conservatorium of Music), Cumberland (Health Sciences and Nursing), Mallett Street (Nursing), Orange Agricultural College, Rozelle (Sydney College of the Arts), St James (Law) and Surry Hills (Dentistry).

Chancellor
(See also: Vice-Chancellor) The non-resident head of the University.

Combined degree course
A program consisting of two degree courses taken together, which usually requires less time than if the courses were taken separately.

Core
(See also: Elective/Option) A Unit of Study that is compulsory for the course or subject area.

Corequisite
A Unit of Study that must be taken with a given Unit. If a corequisite is not successfully completed, it becomes a prerequisite for further study in that subject area.

Course
A complete degree or diploma program.

Credit
(See also: Advanced standing) Recognition of previous studies or studies completed at another institution. If credit is granted then the number of credit points required for completion of the degree course is reduced.

Creditpoint
A measure of value indicating the contribution each Unit of Study provides towards meeting course completion requirements stated as total credit point value.

Dean
The head of a faculty.

Deferment of enrolment
People who have not previously attended a recognised tertiary institution are normally able to defer commencement of their candidature for one year. Applications are handled by the Admissions Office of the University. Application for deferment must be made during the UAC enrolment week at the 'Deferment' desk in MacLaurin Hall and be accompanied by the 'offer of enrolment' card.

Degree
The award conferred following successful completion of a degree course (for example Bachelor's degree or Master's degree).

Department/School
The academic unit responsible for teaching in a given subject area.

Diploma
The award granted following successful completion of Diploma course requirements. A Diploma course usually requires less study than a degree course. Graduate Diploma courses are for graduates only.

Doctorate
(See also: PhD) The Doctorate and the PhD are the highest awards available at the University of Sydney. A Doctorate course normally involves research and coursework; the candidate submits a thesis that is an original contribution to the field of study. Entry to a Doctorate course often requires completion of a Master's degree course. Note that the Doctorate course is not available in all Departments of the University of Sydney.

Elective/Option
(See also: Core) A Unit of Study that may be taken towards, but is not compulsory for, a course or subject area.

Enrolment
The process whereby an applicant officially accepts the offer of a place in a particular course. If UAC application is successful, an 'offer of enrolment' card is mailed to the applicant, along with instructions for enrolment. In most cases, the applicant must attend the University on a particular enrolment day or, if unable to attend, must appoint somebody to enrol on his or her behalf. Units of Study (for March Semester or whole of First Year) must be nominated on enrolment day. Academic records and HECS liability calculations are based on the enrolment details, so students must ensure that the Faculty holds correct enrolment information (see also: Variation of enrolment).

Entry requirement
The level of knowledge and/or experience required for entry to a particular Unit of Study.

Faculty
The administrative unit responsible for overseeing satisfactory progress during a degree or diploma course.

Full-time
A study load usually defined in terms of HECS weighting of at least 0.375 each semester.

Intermediate
Faculty of Science: Second-year level.

Junior
First-year level.

Laboratory practical
See: Practical.

Lecture
(See also: Tutorial) A class given to a large group of students, during which the lecturer speaks or presents audiovisual material and students take notes.

Major
The subject area(s) in which a student specialises at Senior level. Students usually specialise in one (single major) or two (double major) subject areas. The major is usually recorded on the testamur.

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 undergraduate level.

Mature age
A category of Special Admission applicants who are 21 years or older on 1 March of the year in which they want to study and who do not have the high school qualifications normally required for entry into a course.

Minor
Subject areas in which a student studies, but does not specialise at Senior level.

Orientation period
'O Week' takes place during the week prior to lectures in March semester. During O Week, students can join various clubs, societies and organisations, register for courses with Departments and take part in activities provided by the University of Sydney Union.

Part-time
A study load usually defined in terms of HECS weighting of less than 0.375 each semester.

PhD
(See also: Doctorate) The Doctor of Philosophy (PhD) and other Doctorate awards are the highest awards available at the University of Sydney. A PhD course is normally purely research-based; the candidate submits a thesis that is an original contribution to the field of study. Entry to a PhD course often requires completion of a Master's degree course. Note that the PhD course is available in most Departments of the University of Sydney.

Postgraduate
The term used to describe a course leading to an award such as Graduate Diploma, 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.

Practical
Similar to a tutorial, during which experiments or other relevant applied activities are carried out.

Prerequisite
A Unit of Study that must be taken prior to entry to a given Unit.

Prohibition
A Unit of Study that cannot be taken with a given Unit.

Recommended reading
Reading material that is suggested but not compulsory for a Unit of Study.

Registrar
The head of the administrative divisions of the University.

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 the Orientation period (O' Week). Note that unlike enrolment, registration is not a formal record of Units attempted by the student.

Resolutions of Senate
Regulations determined by the Senate of the University of Sydney that pertain to degree and diploma course requirements and other academic matters.

School
Similar to a large Department, otherwise a grouping of Departments.

Semester
A period of 14 weeks during which teaching takes place. There are two semesters each year for most faculties. Semesters are named by the month in which they start, typically 'March' and 'July'

Senior
Second-year level or higher.
Faculty of Science: third-year level.

Special Admission
Certain categories of applicants, such as mature-age applicants, students who have experienced educational disadvantage or Aboriginal or Torres Strait Islander applicants, may apply for admission to the University under one of several Special Admission schemes. Contact the Special Admissions office for further information.

Subject area
One or more Units of Study that comprise a particular field of study (eg Japanese or Chemistry).

Textbook
Reading material that the student is expected to own.

Tutorial
(See also: Lecture) A small class consisting of a tutor and up to about 25 students, during which concepts raised in lectures are discussed in detail and may be supplemented with readings, demonstrations and presentations.

UAI
The University Admissions Index (UAI) is the numerical expression of a student's performance in the NSW Higher School Certificate (HSC), which takes into account both assessment and examination results.

UAL cut-off
The UAI of the last student admitted to a course. Some courses have a minimum UAI as an entry requirement.

Undergraduate
The term used to describe a course leading to a diploma or Bachelor's degree. An 'undergraduate' is a student enrolled in such a course.

Unit of Study
A stand-alone component of a degree or diploma course that is recordable on the academic transcript.

Universities Admissions Centre (UAC)
The organisation that processes applications for most NSW undergraduate university and TAFE courses.

Variation of enrolment
The process whereby students officially notify the Faculty of changes regarding the Units of Study they are attending. This must be done by a certain deadline in each semester, to avoid penalties such as 'discontinued' results on the academic transcript (see: Results) or unnecessary HECS charges.

Vice-Chancellor
(See also: Chancellor) The administrative head of the whole University, including academic and administrative divisions.

Costs

Bursary
A sum given to a student who has limited resources or is experiencing financial hardship, ranging from $100 to $1000.

Fees (full-fee undergraduate/postgraduate)
Tuition, examination or other fees payable to the University by an enrolled or enrolling student in connection with a course of study or attendance at the University and includes fees payable in respect of the granting of a degree, diploma, associate diploma or other award. It does not include annual

subscription to organisations such as the Union or SRC, or fees payable in respect of residential accommodation.

HECS

All Australian undergraduate students are currently required to contribute to the cost of tertiary education through the Higher Education Contribution Scheme (HECS), which is administered under the Higher Education Funding Act 1988. Under HECS students pay for part of the cost of their higher education and the Commonwealth pays the rest. The amount payable is determined by the units of study a student choses to undertake in the case of coursework awards, or the attendance (full-time or part-time) in the case of research students.

Prize

Matriculation, undergraduate and postgraduate funding automatically awarded on academic results in courses, yearly examinations or on the recommendation of the Head of Department. There are also prizes for essay writing and composition by anonymous application. Prize values range from $100 to $6250.

Scholarship

Matriculation and undergraduate funding by application awarded on UAI results for students enrolling in the first year of a degree course. Postgraduate funding for full-time candidates enrolled in a research degree course with scholarship conditions and benefits varying according to specific awards. The intention is to encourage and support scholarship at the University in general or in targeted areas.

Assessment, Examination, Satisfactory Progress and Graduation

Academic transcript/record

The official record of results for each student (see: Results).

Appeal

The process whereby a student may raise objections regarding results, Faculty decisions or other academic matters.

Assessment

(See also: Examination) The appraisal of a student's ability throughout the semester, by various means such as essays, practical reports or presentations, which counts towards the final mark or grade.

Candidate

Someone studying for a degree or diploma. The term may also be used to describe someone sitting for an examination.

Examination

(See also: Assessment) The appraisal of a student's ability, usually at the end of semester. Most examinations take place on campus under strictly supervised conditions but some Units make use of take-home or open-book examinations.

Exclusion

A ruling by the Faculty, which declares the student ineligible for further enrolment for reasons such as lack of satisfactory progress. Students who wish to re-enrol must show good cause why they should be allowed to re-enrol (see: Show cause and Satisfactory progress).

Grievances

See Appeals.

Grade

A category into which a student's final mark falls (see: Results).

Graduand

A person who has fulfilled the requirements of a degree but is yet to graduate.

Graduate

(See also: Postgraduate) A person who has graduated. Also a term used to describe a course leading to an award such as Master's degree or PhD or a student enrolled in such as course.

Graduation

The ceremony during which degrees are conferred and diplomas awarded.

Honours degree

A Bachelor's degree for which extra work (course work and/or thesis) has been completed, usually requiring an extra year of study.

Mark

(See also: Grade) The numerical result of assessments and/or examinations for a Unit of Study, which may be converted to a grade.

Pass degree

A Bachelor's degree.

Re-enrolment

The process by which continuing students enrol in Units of Study.

Results

The official statement of the student's performance in each Unit of Study attempted, as recorded on the academic transcript, usually expressed as a grade:

High Distinction

A mark of 85% and above

Distinction

A mark of 75-84%

Credit

A mark of 65-74%

Pass

A mark of 50-64%

Pass (Concessional)

A mark of 46-49%. The student is deemed to have completed unit requirements but may not necessarily proceed to the next level.

Fail

A mark of less than 50%

Withdrawn

This is the same as if the candidate had not enrolled in the course concerned. Although the University has a record of the withdrawal, the course and result will not appear on the official academic transcript. There is no HECS liability either. In order to have a course recorded as 'withdrawn', notice must be given by the candidate to the Faculty office on or before the deadline. Refer to the section on degree regulations.

Discontinued with Permission

This does not count as an attempt at the particular course, but does appear on the candidate's academic record. A candidate may have enrolment recorded as 'discontinued with permission' where: (1) notice is given to the faculty office on or before the deadline or; (2) after the deadline, evidence is produced of serious illness or misadventure. Refer to the section on degree regulations for deadhnes. Discontinuation with permission does not mean that the student's progress is considered to be satisfactory.

Discontinued

This counts as an unsuccessful attempt at the course concerned and appears on the candidate's academic record. Where notice is given after the deadline for 'discontinued with permission' but before the last day of lectures for the course, the result is 'Disc.'. Refer to the section on degree regulations for deadlines.

Absent Fail

If the candidate misses the deadline for 'discontinued' and does not sit the final exam, the result is 'absent fail'.

Satisfactory progress

A minimum standard of performance required for continuation of enrolment. Senate resolutions rule that if a student fails or discontinues a year of candidature or a Unit of Study more than once then he or she is ineligible for re-enrolment (see: Exclusion and Show cause). Note that some faculties may have alternative or additional requirements for satisfactory progress.

Show cause

The Faculty may require a student to show good cause why he or she may be allowed to continue in the degree or diploma

course, where requirements for satisfactory progress have not been met (see: Exclusion and Satisfactory progress).

Special consideration
The process whereby enrolled students who have experienced significant educational disadvantage may have their assessment deadlines or grades revised.

Study Vacation (Stuvac)
The week prior to the examination period in each semester, during which no classes are held.

Supplementary examination
An extra or alternative examination taken by a student who has experienced significant educational disadvantage during semester or the examination period. Note that some faculties do not offer supplementary examinations (see also: Special consideration).

Suspension of candidature
A complete break in the studies of an enrolled student, usually for a period of one year. Applications are handled by the Faculty office. (Those wishing to postpone commencement of a course need to apply for deferment, see: Deferment of enrolment).

Testamur
The document given to the graduand at graduation.

Thesis
A substantial piece of written work (sometimes called a dissertation) by a student, normally a candidate for an Honours degree or a higher award (such as Master's degree or PhD).

Weighted Average Mark (WAM)
A numerical expression of a student's performance throughout his or her degree program, usually assigning more 'weight' to Senior or Honours years. Note that the WAM calculation may differ for purposes such as eligibility for various scholarships and will vary from faculty to faculty.

Index

Units of study are listed in this index by name and by unit code. (Please note that entries for units of study are truncated after 52 characters.)

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University of Sydney Directory

Map labels: PARRAMATTA, ROSS ST, ARUNDEL STREET, ROAD, DERWENT ST, GLEBE POINT ROAD, N, CITY, International Office, Salle House, Margaret Telfer, Annexe, Mackie, McMaster Laboratory, J.D. Stewart, Ross St Bldg, McMillan, Heydon Laurence, R.D. Watt, U.R.A, Footbridge Theatre, Old Geology, Madsen, Holme, SCIENCE ROAD, Evelyn Williams, Wallace Theatre, Badham, Great Hall, Main Building, Baxter's Lodge, Veterinary Science Conference Centre, John Woolley, Pharmacy, UNIVERSITY PLACE, Sancta Sophia College, St John's Oval, R.M.C. Gunn Building, No.2 Oval, REGIMENTAL CRES, Griffith Taylor, Brennan, Mungo MacCallum, Clock Tower, UNIVERSITY, MacLaurin Hall, H.K. Ward Gym, MANNING, Old Teachers College, Education, Manning, ROAD, Fisher Library, St John's College, Victoria Park, Women's Sports Centre, The Square, R.C. Mills, Anderson Stuart, Edgeworth David, BAREF, No.1 Oval, AVENUE, PHYSICS ROAD, Physics, Edward Ford, Transient, Stephen Roberts, Student Centre, CLEVELAND STREET, MISSENDEN ROAD, Royal Prince Alfred Hospital, Blackburn, Bosch 1A, Wesley College, Chemistry, Madsen, Carslaw, International House, Seymour Centre, Bosch 1B, WESTERN, St Paul's College, FISHER ROAD, EASTERN AVENUE, Aeronautical Engineering, St Andrew's College, St Andrew's Oval, Women's College, St Paul's Oval, Attendant's Lodge, Wentworth, Merewether, Til Sheds, Wilkinson, Mechanical Engineering, Electrical Engineering, Link Bldg, MAZE CRESCENT, CARILLON AVENUE, Biochemistry, Old School, P.N. Russell, Rose St Bldg, CRESCENT, SHEPHERD STREET, CITY ROAD, University Regiment, Institute, MAZE, Chemical Engineering, Civil & Mining Engineering, BUTLIN AVENUE, CODRINGTON ST, Noel Martin Recreation Centre, DARLINGTON ROAD, Darlington House, ROSE STREET, RAGLAN ST, LANDER ST, STREET, KING STREET, Darlington Public School, Clark, Mandelbaum House, Services Building, TO REDFERN TRAIN STATION, GOLDEN GROVE ST, ABERCROMBIE, University Regiment Recreation, CITY

Legend:
- **P** Parking Station
- STA Bus Stop
- University Bus Stop
- **i** Information
- Toilets (a.h.)
- Public Telephone
- Emergency Button
- Food Outlet
- Security Office –Emergency 9351 3333

0 25 50 100 200 metres — all approximate scale